

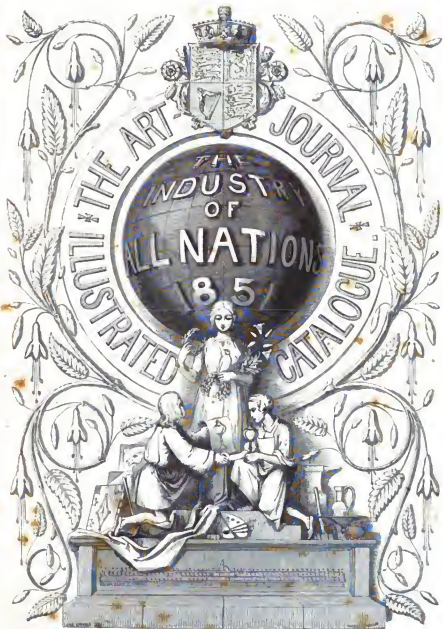


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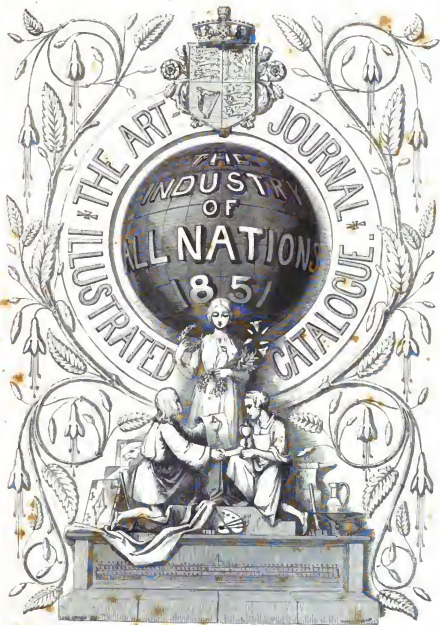
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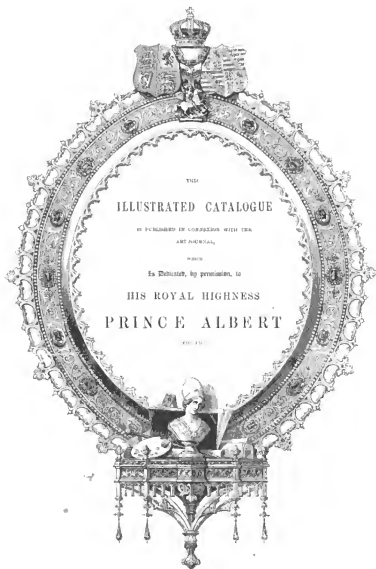
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HEADQUARTERS AND STAGE, FOUNTAIN RESTAURANT, 10, TOWER GATE, WHITECHURCH.





PREFACE.



WE submit this Volume to the public in full assurance of its success. It will be obvious that neither cost nor labour has been spared to render it, in all respects, a worthy record of the great gathering of Works of Art and Industry to which an illustrious Prince invited all the Nations of the World—and to which there was a cordial and grateful response.

We have studied to introduce into this Catalogue, engravings, the most interesting and the most suggestive, of the various objects exhibited; to include, as far as possible, all such as might gratify or instruct; and thus to supply sources of after-education to manufacturers and artisans of all classes, and of all countries; rendering the Exhibition practically beneficial, long after its contents have been distributed. From the Exhibitors, universally, we received zealous aid and encouragement; and the result has been, we hope and believe, to satisfy them, generally, as to selection and manner of execution.

We have obtained from high and experienced authorities, Essays, such as might be permanently useful, in illustrating the leading objects of the Exhibition; and we close the Volume with the Prize Essay, for which we have awarded the sum of 100 Guineas. To the accomplished Professors who have thus co-operated with us, our best thanks are due: we are also bound to express our acknowledgments to Messrs. Dalziel, the eminent engravers, who superintended the engravings, and whose duty has been discharged with great ability, punctuality, and care; to Messrs. Nicholls and other artists by whom we have been assisted; to the Printers, Messrs. Bradbury and Evans, to whose exertions we are largely indebted for having placed at our entire disposal no fewer than thirty presses during a period of eight months, and who may refer to this publication as evidence not only of their skill in wood-block printing, but of the immense resources of their establishment; and to others by whose aid we have been enabled to complete a work which involved considerable toil, anxiety, and attention, on the part of all who were engaged in its production.

PREFACE

It may be permitted us to state that had for its association with *THE ART-JOURNAL*, it would have been impossible to have published this collection at less than four times the price at which it is now issued: and, perhaps, but for the experience and machinery possessed by the conductors of that Journal, it could not have been produced at all. We commenced our labours—and announced this Catalogue—immediately after the promulgation of the plan and the appointment of a Commission: personally visiting most of the principal cities of Europe: communicating with all the chief manufacturers of Great Britain: and arranging for such aids as might enable us to complete our undertaking with regularity, and as early as possible after the opening of the Exhibition.

The results of the Great Exhibition are pregnant with incalculable benefits to all classes of the community: the seed has been planted, of which the future is to produce the fruit: among the eager thousands whose interest was excited and whose curiosity was gratified, were many who obtained profitable suggestions at every visit: the manufacturer and the artisan have thus learned the most valuable of all lessons,—the disadvantages under which they had laboured, the deficiencies they had to remedy, and the prejudices they had to overcome.

But it is to the honour of Great Britain that, notwithstanding the generous risk incurred by inviting competitors from all the nations of the world—prepared as they had been by long years of successful study and practical experience—the fame of British manufacturers has been augmented by this contest: and there can be no doubt, that when His Royal Highness Prince Albert issues his summons to another competition, British supremacy will be manifested in every branch of Industrial Art.

In terminating our labours, we may hope that a project we have repeatedly and earnestly advocated in *THE ART-JOURNAL*, and which we presume to regard as, in some degree, the issue of our efforts to connect the Fine Arts with the Industrial Arts (a procedure originating with that Journal, having never been attempted elsewhere in Europe, and in which for a long period we had to contend against difficulties that seemed insurmountable), will derive some of its advantages from the Report thus made in this Illustrated Catalogue. Upon this topic it is unnecessary for us to dilate: the readers of *THE ART-JOURNAL* are well aware of our efforts to promote the interests of the manufacturer: to induce his advance, on the one hand; and, on the other, to lead the public to appreciate his improvements: to report his progress, and to make him acquainted with the progress of his competitors: to furnish him with such information as might be gathered from the best instructors—and, by immediately connecting him with the artist, to direct him to the safest sources of Art-education.

Our exertions have been fully appreciated: *THE ART-JOURNAL* has obtained a success unprecedented in periodical literature: we have the happiness to contrast the state of British Art-Manufacture in the year 1846 (when our labours in this direction may be said to have commenced), with its position in the memorable year 1851; and we trust that no one who has traced our course will consider us presumptuous in feeling that in the Great Exhibition of the Industry of All Nations, we have received our “exceeding great reward.”



| | | |
|---------------------------|-------|-----------|
| TITLE PAGE | | iii-iv |
| DEDICATION PAGE | | vi-ix |
| PREFACE | | vii-x |
| TABLE OF CONTENTS | | xi-xv |
| HISTORY OF THE EXHIBITION | | xvi-xviii |

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TABLE OF CONTENTS

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TABLE OF CONTENTS

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TABLE OF CONTENTS

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ESSAY ON THE SCIENCE OF THE EXHIBITION I-XVI
By FRANCIS ROBERT HEN, Keeper of Mining Records, Museum of Practical Geology.

ESSAY ON THE HARMONY OF COLOURS, AS EXEMPLIFIED IN THE EXHIBITION I-VIII
By MRS. MERRIFIELD.

ESSAY ON THE VEGETABLE KINGDOM, AS ILLUSTRATED IN THE EXHIBITION I-VIII
By FRANCIS FORBES, F.R.S.; Professor of Botany in King's College, London.

ESSAY ON THE MACHINERY OF THE EXHIBITION, AS APPLICABLE TO MANUFACTURE I-VIII
By FRANCIS GORTON, Regius Professor of Mechanism, University of Glasgow.

PRIZE ESSAY: THE EXHIBITION AS A LESSON IN TASTE I-XVIII
By RALPH NICHOLSON WORMIE.

[To the Reader.—This Table of Contents will be sufficiently instructive to the Reader as to the arrangement of the Pages: he will observe that each article is paged with a distinguishing mark; as thus, P, P†, and that the pages containing the "Engravings of Works Exhibited," are the only pages which contain no such mark.]





HISTORY OF THE GREAT EXHIBITION.

"IT IS MY ANXIOUS DESIRE TO PROMOTE AMONG NATIONS THE COEXISTENCE OF ALL THOSE ARTS WHICH ARE FOSTERED BY PEACE.
AND WHILE IN THEIR TURN CONTINUE TO MAINTAIN THE PEACE OF THE WORLD."—THE EMPEROR.



WE commence this ILLUSTRATED CATALOGUE of the principal contents of the GREAT EXHIBITION with a brief but succinct History of the Building—and of the Project from its commencement up to the present time.

The experiment of an Exhibition of the Industry of all the civilised Nations of the World has been tried, and has succeeded beyond the most sanguine expectations of its projectors. It is, indeed, scarcely possible to instance any great enterprise of modern date which has so completely satisfied the anticipations which had been formed of its results. Differing from most other institutions for benefiting the great family of mankind, which have required time and experience to mature, it has sprung, like Minerva from the brain of Jove "full armed," into life and activity; resembling the goddess, however, only in her more pacific attributes; her love of the olive tree, and her patronage of the Industrial Arts.

Other nations have devised means for the display and encouragement of their own arts and manufactures; but it has been reserved for England to provide an arena for the exhibition of the industrial triumphs of the whole world. She has offered an hospitable invitation to surrounding nations to bring the choicest products of their industry to her capital, and there to enter into an amicable competition with each other and with herself; and she has endeavoured to secure to them the certainty of an impartial verdict on their efforts. Whatever be the extent of the benefit which this great demonstration may confer upon the Industrial Arts of the world, it cannot fail to soften, if not to eradicate altogether,

the prejudices and animosities which have so long retarded the happiness of nations; and to promote those feelings of "peace and good will" which are among the surest antecedents of their prosperity; a peace, which Shakspeare has told us—

"Is of the nature of a conquest;
For thus both parties nobly are subdued,
And neither party loses."

It forms no part of our present object to enter, with any degree of minuteness, into the history of exhibitions of this class; but a brief glance at the origin and progress of such associations in France and England may not be considered irrelevant. So far back as 1766-7, the Society of Arts of London offered prizes for specimens of various manufactures—tapestry, carpets, porcelain, among others—and publicly exhibited the articles which were thus collected; and in 1784 and 1792 the artists of Great Britain formed themselves into two societies for the exposition and sale of works of art. A few years afterwards (1768), the Royal Academy of Painting was established, as a private society, under the immediate patronage of the Crown, and Sir Joshua Reynolds appointed its President. Since then, numerous institutions of a similar character have been set on foot in this country, with considerable advantage to the branches of industry they were intended to benefit. France must, however, be regarded as the originator of exhibitions which are, in character and plan, most analogous to that on whose history we are about to enter. We gather from the historical essay of Messieurs Challamel and Bursat, and the pamphlet of the Marquis d'Avesson on the subject, that, shortly after that nobleman's appointment to be Commissioner of the Royal Manufactories of the Gobelins, of Sévres, and of the Savonnerie, in 1797, he found that two years of neglect had reduced the workmen almost to starvation, whilst it had left the respective warehouses filled with their choicest productions. In this crisis,

HISTORY OF THE GREAT EXHIBITION.

the idea occurred to him of converting the chateau of St. Cloud, then uninhabited, into a bazaar, for the exhibition and disposal, by lottery, of the large stock of tapestry, china, and carpets, on hand in these establishments. Having obtained the consent of the government to his proposal, he set about arranging the various objects in the apartments of the chateau; but, on the day fixed for the opening of his bazaar, he was compelled, by a decree of the Directory, banishing the nobility, to quit France at a very short notice, and the project fell to the ground. On his return to Paris in the ensuing year, the Marquis planned another exhibition of an even more important kind. Having collected a great many objects of taste and *novelté*, he distributed them throughout the house and gardens of the Maison d'Orsay, Rue de Valenciennes, with a view to their sale. In looking over the catalogue of objects of which this collection was composed, we can hardly help being struck with its aristocratic character. The richest furniture and *marquetrie* produced by Boulle, Riesener, and Jacob; the finest clocks and watches of L'Epine and Leroy; the superb rhins of Sèvres, of Angoulême, and of Nant; the most elegantly bound books, fully confirming the traditional excellence of Grolier and De Thou; silks of Lyons; historical pictures by Vincent and David; bronzes, and sculpture; served to show to what class of the community French manufacture had, up to that period, been mainly indebted for support. The success which attended the efforts of the Marquis led to the adoption of his idea by the government, and the establishment of the first official Exposition, on the very spot, on the Champ de Mars, on which the army had held a triumphal show of its splendid collection of Italian spoils. Six weeks after that fête, the nation erected on the same spot a Temple of Industry for the exhibition of more pacific trophies; an edifice surrounded by sixty porticoes, filled with the most beautiful objects that had been manufactured in France. The system of deciding on the comparative merits of the various exhibitors by juries, composed of gentlemen distinguished for their taste, was then, for the first time, adopted. Prizes were awarded for watches, mathematical instruments, painting, china, etc. The success of this Exposition was so great, that the government resolved to repeat it annually; but, in spite of the circular of the Minister of the Interior to that effect, the political commotions of the times prevented him from repeating it, until the year 1801, and then only at the instance of the First Consul, who visited the factories and ateliers of the principal towns in France, with several men of science, for the purpose of convincing the manufacturers of the importance to themselves of supporting such an undertaking. This second display took place in the quadrangle of the Louvre, in a temporary building erected for the occasion. Notwithstanding the difficulties which had attended its establishment, 200 exhibitors were competitors for the prizes. Upon this occasion, ten gold, twenty silver, and thirty bronze medals, were awarded; one of the last having been adjudged to the celebrated Jacquard, for his now famous machine.

It must not be overlooked that even at this early period the Juries awarded prizes for improvements in the quality of wool as a raw material, and for excellence in woolen and cotton fabrics. The third exhibition took place on the same spot in 1802; and on that occasion no fewer than 800 exhibitors competed for the prizes. The popularity of those exhibitions led to the formation of the *Société d'Encouragement*, which aided very importantly the industrial efforts of the French manufacturers. It is a remarkable fact, however, that whilst in France the Society of Arts and Manufactures owes its origin to these public exhibitions of the products of its industry, we are in England wholly indebted for exhibitions of this kind to our Society of Arts. The fourth exhibition of French industrial products took place in 1806, in a building erected for the purpose in front of the *Hôtel des Invalides*; when the exhibitors had increased to 1400, and it was found necessary to keep open the doors for 34 days. Here, for the first time, were displayed the printed cottons of Mulhausen and Logelbach; silk, thread, and cotton lace; blonde, cloth and mixed goods. Among the improvements for which prizes were awarded, were the manufacture of iron

by the aid of coke instead of charcoal, and that of steel by a process wholly unknown till then.

The disturbed condition of France, arising out of her wars with her European neighbours, prevented the fifth exhibition from taking place until 1819, when it was inaugurated on the fête of St. Louis, and continued open for thirty-five days. The number of exhibitors had increased to 1700. The sixth exhibition took place in 1823 on the same spot as its predecessor, and remained open 50 days. Great improvement was manifest in the manufacture of many of the articles; in machinery more especially. It was on this occasion that the model of the first French suspension bridge over the river Rhone, by M. Leguin, was exhibited by its engineer. The next Industrial Exposition occurred in 1827, when a large building was erected for it in the *Place de la Concorde*. The eighth was held in 1834; the ninth in 1839, when no fewer than 4081 competitors entered the field; the tenth in 1844, when 3000 manufacturers exhibited their productions; and the eleventh in 1849, in the *Champs Elysées*, when the number of competitors had increased to 4494. [Both these exhibitions were fully reported and extensively illustrated in the *ART-JOURNAL*.] It is true that other nations had followed the example of France, but without achieving her success. The Belgian and Bavarian governments have both had their industrial exhibitions (the Exhibition at Brussels was fully reported and illustrated in the *ART-JOURNAL*); but neither of them call for especial notice.

In this country, during the last dozen years, there have been many exhibitions of this description; but, with here and there an exception, they have differed little in character from the ordinary Bazaar. Manchester, Leeds, and Dublin (the last so early as 1827) had all opened bazars for the sale of the productions of the surrounding neighbourhood; but the first building in this country devoted expressly to the exhibition of manufactures, was that erected by Birmingham in 1840 on the occasion of the visit of the British Association. The building, on that occasion, included a space of 10,000 square feet, independently of a corridor of 800 feet, which connected the main exhibition room with Bingley House, within whose grounds it had been located; so that, including the rooms of the old manor, the total area covered by the Exhibition was equal to 12,500 square feet. The cost of the building did not exceed 1300*l*. This and the Free Trade Bazaar, held in Covent Garden in 1845, approached nearer to the French exhibitions in the variety and extent of the national productions they comprised, than any of their predecessors in this country. [Both these exhibitions—that of the Free Trade Bazaar, and that held in Birmingham—were fully reported and extensively illustrated in the *ART-JOURNAL*.]

The idea of an Exhibition which should include specimens of the Industrial Products of various nations originated, in the early part of 1849, with M. Buffet, the French Minister of Agriculture and Commerce; and with a view to ascertain the opinions of the manufacturers on the subject, circulars were addressed by him to the Chambers of Commerce throughout France, proposing that specimens of the arts and manufactures of neighbouring countries should be admitted to the approaching exposition. The replies which were received to this suggestion were so unfavourable to its adoption, that M. Buffet was induced at once to abandon the idea. If, therefore, the merit of having originated exhibitions of her own manufactures belongs to France, it is to his Royal Highness PRINCE ALBERT that the more noble and disinterested plan of throwing open an institution of this description to the competition of the whole world, is exclusively due; and his suggestion has been carried out in a spirit every way worthy its grandeur and generosity.

The great success which attended the French Industrial Exposition of 1844 had caused representations to be made to the English government of the advantages which would accrue to our commerce from a similar exhibition in this country; but the efforts which were made to obtain its co-operation appear to have been wholly unavailing. In 1844, a proposal to establish a self-supporting exhibition of the products of British industry, to be directed by a

HISTORY OF THE GREAT EXHIBITION.

Royal Commission, was submitted by H.R.H. Prince Albert to the government, but with no better success; and it then became apparent that no reliance whatever could be placed upon the active support of Her Majesty's ministers for any such plan. They had, in all probability, no objection to see the experiment tried, but were evidently unwilling to commit themselves to any responsibility in behalf of a scheme which seemed to be beset by so many difficulties. Meanwhile, the popular feeling in favour of such an undertaking was rapidly strengthening, and the success which has attended the experiment may, in a great measure, be referred to the freedom of action which this dissociation from the timid councils of the government secured for its projectors. It may be proper, in this place, to remark that, excepting in facilitating its correspondence with foreign nations; the provision of a site for the building; and the organisation of the police; no assistance has been either sought or obtained from the government for the present Exhibition; whilst, in every case in which it has been attended by expense, the cost has been defrayed out of the funds at the disposal of the Executive Committee.

The initiative in those inquiries which were indispensable to the due consideration of the means by which the idea of an Exhibition for all Nations was to be carried out, was taken by the Society of Arts, a committee of whose members was formed in June, 1845, for the purpose; the funds for defraying the preliminary expenses of which were subscribed among themselves. An inquiry having been instituted for the purpose of ascertaining how far the manufacturers of Great Britain were favourable to such a design, with no very encouraging result, the idea was for a time abandoned. In 1847, the Council of the Society launched their pilot balloon in the shape of an Exhibition of British Manufactures, professedly the first of a series; and encouraged by its success, repeated the experiment in the ensuing year; when the intention of its executive was announced, to establish an annual competition of the same kind, with a view to the opening of a quinquennial exhibition for the industrial products of all nations to be held in 1851. As an accessory to their plan, the council



THE MEDAL OF H. R. H. ALBERT.



THE MEDAL OF MR. LEONARD C. WYON.



THE MEDAL OF H. R. H. VICTORIA.

sought to connect with it the various Schools of Design established in our larger towns, and obtained the co-operation of the Board of Trade, through its president, Mr. Labouchere, in that object. They also secured the promise of a site from the Earl of Carlisle, then Commissioner of Woods and Forests; who offered them the central area of Somerset House, or any other government ground at his disposal which seemed adapted for their purposes. The Exhibition of 1840, confined for the most part to works in the precious metals, several of the more important of which were contributed by Her Majesty, proved more successful than either of the two that had preceded it, and stimulated proportionally the exertions of the Council. A report on the French Exposition of the same year, by Mr. Digby Wyntt, had, moreover, strongly confirmed them in their conviction of the utility of such an exhibition in this country.

Meanwhile, H. R. H. Prince Albert was not only privy to, but entirely approved of these proceedings; and, on the termination of the Parliamentary session of 1849, took the subject under his immediate superintendence. But, indeed, for his indefatigable perseverance, his courageous defiance of all risks of failure, his remarkable sagacity in matters of business, and the influence which attached to his support, the whole project, notwithstanding the great exertions which had been made to secure its realisation, must have fallen to the ground. The maturely considered views of his Royal Highness, and the patriotic objects he proposed in

making this great peacemaking offering to mankind, are admirably set forth in the speech delivered by him on the occasion of the banquet given by Mr. Alderman Farncomb, then Lord Mayor of London, to the municipal authorities of the United Kingdom in support of the project. "The Exhibition of 1851 would," he said, "afford a true test of the point of development at which the whole of mankind has arrived in this great task, and a new starting point from which all nations would be able to direct their further exertions." It is difficult to assign to Prince Albert the degree of praise which is really his due on this occasion without incurring the suspicion of being in some degree influenced by the exalted position he holds in the

HISTORY OF THE GREAT EXHIBITION.

country. "It is," says Coleridge, "one of the most mischievous effects of flattery that it renders honourable natures more slow and reluctant in expressing their real feelings in praise of the deserving, than for the interests of truth and virtue might be desired." The remark applies with peculiar force to a person of His Royal Highness's rank. Rather than incur the imputation of sycophancy, his admirers have sometimes been led to do less than justice to the very prominent part he has taken in this project, and to the consummate skill with which he has smoothed down all opposition to it. In a word, for the World's Exhibition, the world is entirely indebted to the Prince Consort.

On the 29th of June, 1849, at a meeting, at Buckingham Palace, of several of the gentlemen, who afterwards became members of the Royal Commission, and Prince Albert, his Royal Highness communicated his plan for the formation of a great collection of works of Industry and Art in London, in 1851, for the purposes of exhibition, of competition, and of encouragement; when he proposed that these contributions should consist of four great divisions, namely: raw materials, machinery and mechanical inventions; manufactures; and sculpture and plastic art generally; and the best proof we could adduce of the sagacity by which his suggestions were characterised is to be found in the brilliant success which has attended their almost literal adoption. At the second meeting for the same object, held at Osborne House on the 14th July, 1849, which was attended among other distinguished supporters of the project, by the late Sir Robert Peel, His Royal Highness gave a general outline of the plan of operations he recommended, which met with the unanimous approbation of his fellow labourers. These suggestions comprised the formation of a Royal Commission, its duties and powers; the definition of the nature of the Exhibition, and of the best mode of conducting its proceedings; the determination of the method of deciding the prizes, and the responsibility of the decision; and the means of raising a prize fund, and providing for the necessary expenses which the permanent establishment of quinquennial exhibitions would involve. The amount which it was proposed to distribute in prizes was 20,000*l.*, and the lowest estimate for a suitable building did not fall below 50,000*l.* He also pointed out the advantages of the site which has since been adopted, and recommended an early application to the crown for permission to appropriate it.

Impressed with the truth of the proverb, *Ce n'est que le premier pas qui coûte*, the council of the Society of Arts, after much fruitless negotiation with other parties, entered into an

engagement with Messrs. Munday, the well-known contractors, by which those gentlemen undertook to deposit a prize fund of 20,000*l.*; to erect a suitable building; to find officers; to advance the money requisite for all preliminary expenses; and to take the whole risk of loss; on the following conditions: The 20,000*l.* prize fund, the cost of the building, and five per cent on all advances, to be repaid out of the first receipts; the residue to be divided into three equal parts; one part to be paid over at once to the Society of Arts, in aid of future exhibitions; and out of the other two parts all other incidental costs, such as those of general management and preliminary expenses; the residue, if any, to be the remuneration of the contractors for their outlay, trouble, and risk. Messrs. Munday subsequently consented, instead of this division, to receive such part of the surplus only, if any, as after payment of all expenses might be awarded by arbitration. An executive committee of four members, who became subsequently the executive committee of the Royal Commission, was then formed, who induced the contractors to allow them the option of determining the contract any time before the first of February, 1850. In such an event, however, Messrs. Munday's claims to compensation for their outlay and risk were to be adjusted by arbitration. After remaining out of their money more than a year, Messrs. Munday obtained very recently, an award of 5000*l.* with interest.

The pecuniary part of the undertaking having thus been provided for, the next object was to satisfy the government of the desire of the public for the proposed Exhibition, in order to warrant the issue of a Royal Commission for its management. With this view, a deputation from the Executive Committee proceeded to the manufacturing districts to collect the necessary information; and after visiting sixty-five of the most important towns and cities of the United Kingdom, brought back with them strong manifestations of the popular desire in the shape of documents in which nearly 5,000 influential persons had registered their names as promoters of the project. About the same time Mr. Scott Russell, having occasion to visit several of the states included in the Zollverein, found that the advantages which it offered to the commerce of the world were everywhere appreciated, and received the most cordial offers of co-operation from a great number of influential persons in those countries. On the presentation of these reports to the government, the Royal Commission was issued, and at their first meeting on the 11th January, 1850, they decided on availing themselves of the election which had been reserved for them by the Society of



EXTENSION OF THE BUILDING FOR THE GREAT EXHIBITION (1851-1852).

HISTORY OF THE GREAT EXHIBITION.

Arts, and rescinded the contract with Messrs. Munday; thus relying for their means of carrying out their views, in the first instance, wholly upon voluntary contributions.

How the appeal of the Commissioners to the country was responded to is sufficiently known. Meetings having taken place in all parts of the United Kingdom, subscriptions began to flow in, in a highly encouraging manner. On the 17th of October, 1849, the Lord Mayor of London called a meeting at the Egyptian Hall to receive a deputation of the members of the Society of Arts, charged by Prince Albert to explain the outlines of His Royal Highness's proposal for a Great Exhibition of the Industry of All Nations, to be held in London, in the year 1851. This meeting was attended by nearly four hundred of the most influential merchants, bankers, and traders, of London, and nothing could be more cordial than the spirit displayed by almost every person who assisted at it. Mr. Cole, who was the exponent of Prince Albert's views on the occasion, gave, in a speech of considerable ability, an interesting account of the reception the project had met with from the large body of manufacturers in the provinces, whose adhesion he had succeeded in obtaining. The feeling in favour of an international Exhibition appears to have been almost unanimous. Other meetings in the city, and other parts of the metropolis, were subsequently held, and a large amount of subscriptions collected. Whilst matters were progressing thus feverishly, the Lord Mayor of London conceived the magnificent idea of inviting the chief magistrates of the various towns, cities, and boroughs, throughout the United Kingdom, to a grand banquet, at the Mansion-House, with the view of promoting the success of the Exhibition. The results of this *réunion* were, in the highest degree, satisfactory. Nearly the whole body of provincial Mayors accepted the invitation, and were thus inspired with something like a personal interest in the success of the undertaking. They had, moreover, the advantage of receiving Prince Albert's explanations from his own lips. Among the voices raised in favour of an international Exhibition on this occasion, were those of Lord John Russell, Lord Stanley, the Archbishop of Canterbury, the French Ambassador, and the late lamented Sir Robert Peel. On the succeeding day a meeting of the public functionaries who were present at the dinner, took place in the Egyptian Hall for business purposes, when the ball was set moving in good earnest.

The Commissioners having revised their original intention

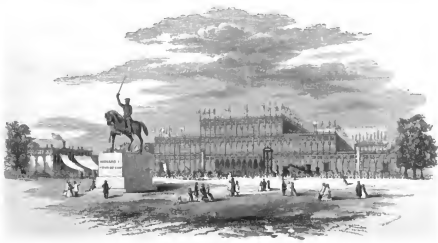
to give large money prizes, invited, by public advertisement, artists of all countries to compete for the designs for the reverses of three bronze medals intended to form the respective prizes, which should be illustrative of the objects of the Exhibition; and offered three prizes of 100*l.* each for the three subjects which should be selected for that purpose, and three prizes of 50*l.* for the three best designs which might not be accepted. In consequence of this advertisement no fewer than one hundred and twenty-nine designs were sent in, and were publicly exhibited in the rooms of the Royal Society of Arts. The judges appointed by the Commissioners were Lord Colborne, W. Dyce, Esq., R.A., J. Gibson, Esq., R.A., M. Eugene Lami, C. Newton, Esq., Herr J. D. Passavant, and Dr. Gustave Waagen; who on the 29th June decided in favour of the following gentlemen:—The first prize of 100*l.* each, were awarded to, 1. Hyppolyte Bonnardel, of Paris. 2. Leonard C. Wyon, of London. 3. G. G. Adams, of London. The second prizes of 50*l.* each, were awarded to, 4. John Hancock, of London. 5. L. Wiener, of Brussels. 6. M. Geyraud, of Paris.

The medal of M. Bonnardel is decidedly the most ambitious of the three. It represents Britannia standing on a platform, with outstretched arms, and a crown in each hand with which she is in the act of decorating, simultaneously, the brows of Mercury, and a female he is holding by the hand, who may be presumed to be Industry. Flags of different nations make up the background. Motto—"Est etiam in magnis quidam respublica mundo."

Mr. Wyon's design represents Britannia seated and in the act of placing a laurel wreath upon the head of a figure emblematical of Industry, whilst she extends her right hand as if to raise her up. Behind her are imperiousnesses of the four quarters of the globe by whom Industry has been conducted to Britannia. To the right are emblems of the four seasons: 1. The cotton plant and wheat-sheaf; 2. A wheel; 3. A bale of goods; 4. A vase. Motto—"Dissociata locis concordi pæce ligavit."

Mr. Adams's medal presents a gracefully modelled group of Fame crowning Industry, and Commerce looking on with approving eye. Industry has a distaff in her hand, and appears to be sitting on a cornucopia.

In July, 1850, letters patent were issued, incorporating the Commissioners under the title of "The Commissioners for the Exhibition of 1851," and the charter was accepted on the



VIEWERS ENTRANCE TO THE GREAT EXHIBITION.

HISTORY OF THE GREAT EXHIBITION.

15th August. A guarantee fund of 230,000*l.* had been subscribed by a limited number of gentlemen, favourable to the Exhibition, one of whom opened the list with a subscription of 50,000*l.* Upon this security the Bank of England undertook to make the necessary advances. On the 21st of February preceding, the Building Committee ventured to recommend that upwards of sixteen acres should be covered in.

With a view to give Foreign nations as much time for preparation as possible, the Commissioners resolved, long before they had decided on the size and character of the building, to divide a certain large extent of space among foreign countries, amounting in the whole to 210,000 superficial feet, or rather more than the entire space which France had occupied for its two expositions of 1844 and 1849. Subsequently, the quantities of space allotted to foreign nations was increased, France obtaining 85,000 feet instead of 50,000. A definite amount of space proportioned to their presumed wants was also allotted to each of the British Colonies. With the view of avoiding, in the first instance, the confusion that would have arisen from the collection of duties for the

objects imported, the government was induced to treat the Exhibition as a bonded warehouse. On the 31st of October, 1850, the last day on which applications for space could be entertained, the whole of the demands for horizontal (floor and counter) space exceeded 417,000 superficial feet; being beyond the amount of available space for the United Kingdom, by about 210,000 superficial feet. Every class appears however to have been satisfied with the final allocations, which were the best that could have been made under the circumstances.

When the time arrived for making definite arrangements for the erection of the building, the Commissioners had only 35,000*l.* in hand; and, notwithstanding the guarantee to which they had themselves largely subscribed, they must have felt themselves committed to a very deep responsibility. Nothing daunted, however, an invitation was addressed, through the public prints, to architects of all nations, to furnish designs for an edifice, the roof of which was to cover 700,000 square feet; and the area of which, including the open spaces, was not to exceed 900,000 feet. Other conditions were enumerated which



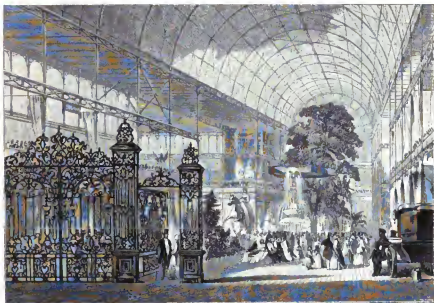
OUTRIDE OFFICIALS TO THE TOWER.

HISTORY OF THE GREAT EXHIBITION.

showed that the whole of the details had been carefully and judiciously considered. Although the time allowed for the preparation of the drawings was only a month, there were no fewer than two hundred and thirty-three competitors, many of whom sent in designs of a highly elaborate character. Of these, thirty-eight, or one-sixth of the whole, were from foreigners: 128 from London and its vicinity; and 51 from the provincial towns of England. The duty of examining, classifying, and comparing them, devolved on Mr. Digby Wyatt, who embodied the result of his investigation in a report. After fifteen protracted sittings, the Building Committee arrived at the "manimous conclusion that, able and admirable as many of these designs appeared to be, there was yet no single one so accordant with the peculiar objects in view, either in the principle, or detail of its arrangements, as to warrant them in recommending it for adoption." This report was presented to the Royal Commissioners on the 9th of May. The rejection of the whole of the plans of the competing architects created, as was natural, no ordinary dissatisfaction; a feeling which was in no respect diminished by the fact that the Building Committee had prepared a plan of their own; and, assisted by Mr. Digby Wyatt, Mr. Charles Heard Wild, and Mr. Owen Jones, had completed extensive working drawings which they had caused to be lithographed. Their next step was to issue invitations for tenders to erect the building; requesting from the respective competitors, in addition, such suggestions and modifications, accompanied by estimates of cost, as might seem likely to effect a reduction in the general expense. The design of the Building Committee comprehended an edifice 2200 feet long, and 450 feet wide. Into any detailed description of it, however, it is foreign to our purpose to enter; suffice it to say that this child of many fathers was condemned, not less for its extraordinary ugliness, than that it would have been unnecessarily large, cumbersome, and costly, for a purpose avowedly temporary. Meanwhile, the contractors found some

difficulty in getting their tenders ready by the 10th of May. On that day, however, nineteen were sent in; but of these only eight professed to comprehend the execution of the whole of the work. The amounts of the remaining eleven competitors varied from 120,000*l.* to 150,000*l.*; and this, for the use only of the materials for the building. The Building Committee defended their edifice in an elaborate report, setting forth its economy and good taste. Public opinion was, however, decidedly against its adoption; and fortunately, a gentleman, not an architect, came "to the rescue."

Among the contractors who had accepted the invitation of the Building Committee, was the firm of Fox & Henderson, who, availing themselves of the permission to alter and amend the plan of the Committee, contained in the latter part of the report, presented a tender for a building of an entirely different character from that which had been suggested by the Committee. This, we need scarcely add, was the plan which, with certain modifications and additions, was ultimately adopted; and for which, notwithstanding all that has been said to the contrary, the public is wholly indebted to Mr. Paxton. He was, as he himself tells us, at that time occupied in erecting a house for the Victoria Regia, in the Gardens of the Duke of Devonshire, at Chatsworth, and to that circumstance the Crystal Palace may be said to owe its direct origin. The accounts which have been given by Mr. Paxton, Mr. Fox, and Mr. Barry, of their respective shares in the production of the accepted plan, are not strictly reconcilable with each other; but that the idea, in a state of maturity which demanded no great effort of mind to make it more complete, originated with Mr. Paxton, does not admit of a question. The very nature of that idea which rendered a single section of the building completely expulsive of the whole, would seem to have rendered elaborate plans of the proposed edifice, in its entirety, less a work of mind than of mechanical dexterity. A single bay of 24 feet square would,

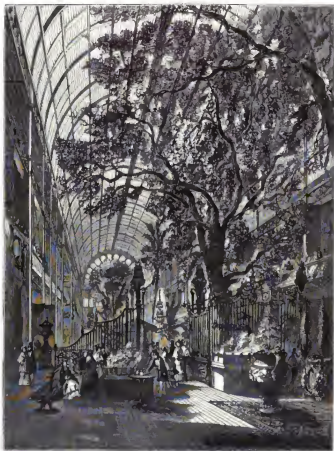


INTERIOR OF THE PALACE, AS SEEN FROM THE NORTH ENTRANCE.

HISTORY OF THE GREAT EXHIBITION.

if we except the transept and its semicircular roof, supply the means of making a correct drawing of the whole; and if it be correct, as stated by Mr. Paxton at the dinner given to him at Derby, on the 6th of August, that his original sketch on a sheet of blotting paper indicates the principal features of the building as it now stands as much as the most finished drawings which have been made since, there can be no excuse for attempting to deprive him of any portion of the merit of the invention. But he appears to have done considerably more than merely furnish the idea. In nine days from that on which he had made the blotting paper sketch, he was in possession of nine plans, all, with a single exception, prepared by his own hand. And although his suggestion to Messrs. Fox & Henderson was offered so late as the 22nd June, 1850, his plan was engraved and published in the *Illustrated News* of the 6th July. There can be no doubt that the great experience of Mr. Fox enabled him, after consulting with

Mr. Cole, to adapt the drawings more to the arrangements adopted by the Committee in the plan they had themselves prepared, than Mr. Paxton had done; but in a case like this, the first idea is considerably more than half the battle. Mr. Fox prepared, he tells us, the working drawings, and made everything ship-shape; but to the fullest extent he admits that all the leading features of the plan, including each progressive improvement of any importance, were suggested by the originator of the general idea. At one of the meetings of the Building Committee, it was suggested that the transept, at the sacrifice of not dividing the building into two equal parts, should include the larger trees; but there appeared to be a good deal of difficulty in adopting such a recommendation, as at that time the whole of the roof was intended to be flat. Having promised to see what could be done in the matter, Mr. Paxton accompanied Mr. Fox to his office, and whilst he was occupied in arranging the ground-



THE TRANSEPT, FROM THE NORTH SIDE.

HISTORY OF THE GREAT EXHIBITION.

plan, so as to bring the trees into the centre, he "hit upon the idea of covering the transept with a circular roof, similar to that on the great conservatory at Chatsworth, and made a sketch of it, which was copied that night by one of Mr. Fox's draughtsmen." In a recent letter to the "Times" newspaper, Mr. Barry, in reference to this statement, declares that at the first presentation of Mr. Paxton's design to the Building Committee, as well as to the Royal Commission, and before he had offered any suggestion on the subject, he recommended, very strongly, the addition of a vaulted roof, not only to the transept, but also over the nave; and submitted to the Commissioners a sketch showing the effect of such an addition. The probability, therefore, is, that the two gentlemen hit upon the same idea at pretty nearly the same moment. There is, however, at all events, no pretext for imputing to either of them a desire to claim for himself a merit which does not belong to him. The Royal Commissioners themselves, in their official report, distinctly acknowledge the services which were rendered to the edifice by Mr. Barry's judicious suggestions, and whilst they compliment Mr. Paxton on the "grand effect produced by his happy idea of raising the semi-cylindrical vault of the transept above the tiers of terraces which extend on either side of it," acknowledge that, "for much of its grace of proportion and beauty of form, the building is indebted to Mr. Barry;" and that "upon the form and distribution of the arches and filling in frames, as well as of the columns, the suggestions of that gentleman exercised a happy influence." We doubt, however, if the adoption of these suggestions should be allowed to detract in any respect from the *éclat* due to Mr. Paxton as the legitimate parent of the Crystal Palace.

After consulting the iron masters, glass manufacturers, and others, on whose co-operation they were compelled, in a

great measure, to depend for their means of fulfilling their proposals, Messrs. Fox & Henderson sent in their tenders, and on the 16th were verbally informed that they were accepted. On the 20th July, the Committee expressed a wish that they should commence operations; but as no Royal Charter could be obtained until the succeeding year, and as the solicitor to the Treasury was of opinion that until that had been obtained, the Commissioners could not legally act, the works must have stood still, but for the good understanding and mutual confidence, which subsisted between Messrs. Fox & Henderson and themselves. Rather than thus any delay should take place, they agreed to proceed at once, and to incur the risk whatever it might be of a sitting for the Royal Charter. To avoid unnecessary complication, Mr. William Cubitt was invested with absolute power to arrange with Messrs. Fox & Henderson all the details connected with the arduous task on which they were about to enter. On the 30th July, they obtained possession of the ground, and proceeded to take the necessary levels and surveys, and to fix the position of the various points. The working drawings, all of which he made himself, occupied Mr. Fox 18 hours a day for seven weeks; and as these left his hands, his partner Mr. Henderson directed the preparation of the iron work and other materials required for the construction of the building. As the drawings proceeded, calculations of strength were entered into; and so soon as a number of the important parts were prepared, such as the cast-iron girders and wrought-iron trusses, Mr. Cubitt was invited to witness a set of experiments illustrative of the correctness of those calculations. The greatest load it was possible for it to receive having been placed upon each part, it was distinctly shown that it would bear four times that weight without a fracture. As the works advanced, the safety of the edifice was much discussed in the public prints, and grave doubts of its stability having been



THE GREAT EXHIBITION—1851.

HISTORY OF THE GREAT EXHIBITION.

suggested by Mr. Turner, the constructor of the large conservatory in Kew Gardens, and by Professor Airy the Astronomer Royal, a series of experiments was decided on which should set any such question wholly at rest. Tests had, as we have shown, been applied in the course of the work which had satisfied the scientific men who witnessed them that the iron girders would bear a strain upon them four times as great as they could ever be called upon to bear; but it was resolved to subject them to a still severer ordeal.

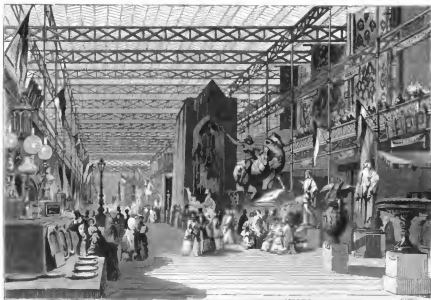
The first of these more elaborate experiments, which took place in the presence of Her Majesty, Prince Albert, and several scientific persons, was to ascertain the extent of oscillation that would be produced in the galleries by the regular motion of large bodies of persons. Three hundred workmen were accordingly deployed over the platform, and then crowded together as closely as possible. The load borne by the planks laid across the platform represented the degree of pressure that would be occasioned by the crowding of the bays of the galleries. The amount of deflection produced by this experiment was scarcely perceptible. The men next walked regularly and irregularly, and finally ran over the temporary floor, with little more effect. Even when packed in the closest order, and jumping simultaneously for several minutes, the play of the timbers and the wrought-iron work, was admirably developed, and the extreme deflection of any one girder did not exceed a quarter of an inch. As, however, the workmen were unable to keep military time in their step, the whole corps of Sappers and Miners employed on the ground, arranged in close order, marched several times over and around the bays without producing any other effect than is observable in a house in which dancing is going on. The crowding experiment suggested by Messrs. Maudslay & Field, the eminent civil engineers, rendered any further test wholly unnecessary. Seven frames, each capable of holding 30 cannon-balls, of 68lbs each, were constructed, and drawn with their contents over the floor. In this way a pressure on the flooring of seven and

a-half tons was obtained; the probable pressure from a crowd not exceeding 95lb. The pressure of an ordinary crowd, however, at a public meeting or a theatre does not exceed 60lbs. to the square foot.

During the entire progress of the building, Mr. Fox was present daily at the works, to assign to each part, as it arrived upon the ground, its proper position, without which it would have been impossible that the building should have been completed in time; and so unlimited was the confidence displayed by his firm in the Royal Commissioners, that it was not until the 31st of October that the contract with them was completed; up to which time they had not only received no order for the building, and no payment on account of the work they had done, but had incurred the risk of expending upwards of 50,000*l.* without being in a legal position to call upon the Commissioners for the repayment of any portion of it. There was, however, no ground for apprehension on the score of finance; for whilst the work was yet in progress, funds were flowing in to the exchequer of the executive with a rapidity altogether unlooked for, and to an amount which was calculated to silence all further anxiety on the subject. To anticipate, in some respects, the order of our narrative, we may mention that before the Commissioners had opened their doors to the public, that is to say on the 29th of April, they had in hand 118,044*l.*—namely, 64,844*l.* arising from public subscriptions; 32,000*l.* from Messrs. Spicer & Clowes for the privilege of printing the Catalogues; 6500*l.* from Messrs. Schweppé, for the privilege of supplying refreshments; and 40,000*l.* arising from the sale of season tickets. The last item afforded a tolerable notion of the probable prospects of the Exhibition, in a financial point of view; nor have those expectations, sanguine as they were, been in any respect disappointed.

It is now time to enter upon the history of the building itself, and of the manner in which the contractors have fulfilled their duty to their employers and to the public at large.

The site of the Great Exhibition is the one originally



THE GREAT EXHIBITION.

HISTORY OF THE GREAT EXHIBITION.

proposed for it by H.R.H. Prince Albert. It consists of a rectangular piece of ground in Hyde Park, situated between the Queen's Drive and Rotten Row, and contains about 26 acres, being 2900 feet in length, by 500 feet in breadth. Its principal frontage extends from east to west. Several lofty trees which stretch across the centre of its length have been allowed to remain, and it is to them we are indebted for the magnificent transept and semicircular roof, suggested after the first plans had received the approval of the Commissioners. The ground although apparently level has a fall of from 1 to 250 inches from west to east. Among the most striking advantages of the spot were the facilities of access from all parts which it presented, and the ease with which it could be drained and supplied with gas and water; whilst the beauty of the neighbourhood can scarcely be exceeded within the same convenient distance from the metropolis. Indeed, however strong may have been the private objections urged against the adoption of this site, in the first instance, it is now universally admitted that a more desirable locality for the purpose to which it has been converted could not have been selected. The plan of the building forms a parallelogram 1848 feet long and 408 feet wide; independently of a projection on the north side, 48 feet wide and 936 feet long. The principal entrance is situated in the centre of the south side, opposite to Prince of Wales' Gate, which forms one of the main openings into Hyde Park. After passing through a vestibule 72 feet by 48, the visitor finds himself in the transept, which is 72 feet wide, 108 feet high, and 408 feet from south to north. The roof springs in a semi-cylindrical form from an elevation of 68 feet from the ground, and occupies a diameter of 72 feet. The *coup d'oeil* of the exterior of the building from the Prince of Wales' Gate is exceedingly striking. On each side of the space covered by the transept runs an aisle 24 feet wide. The nave or grand avenue, 72 feet wide by 64 feet high, occupies the centre throughout the entire length of the building, and

is 1848 feet long. On either side smaller avenues or aisles run parallel with it 24 feet in width, and at a height of 24 feet from the ground are galleries, which not only extend the whole length of the building, but which are carried completely round the transept; thus opening a direct communication throughout the whole of that floor. Beyond the nearest aisles and parallel with them at a distance of 48 feet, are second aisles of similar width, with galleries over them, which are on the same level as those by which the outside aisles are surmounted. To facilitate access from one line of galleries to the other, bridges, at frequent intervals, span the 48-feet avenues, and, at the same time, divide them into courts, most of which have been so arranged as to be open to the spectator, who may happen to be in the gallery above. The width of 48 feet thus subdivided, and the second aisles, are roofed over at a height of 44 feet from the ground. The remaining portion of the building comprises in width only one story 24 feet high, in which, of course, there are no galleries. Access to the galleries is obtained by ten double staircases, 6 feet wide. About its centre, the grand avenue, at a point determined by the position of three large trees which it was resolved to enclose, is crossed by the transept. Two other groups of trees, whose immolation was also interdicted, have rendered open courts necessary; but they are, nevertheless, included within the building. The entire area enclosed and roofed over comprises no fewer than 772,784 square feet, or about 19 acres; thus presenting an edifice about four times the size of St. Peter's, at Rome, and six times that of St. Paul's. We have already described the principal entrance at the south front. Beside this, there is one at each end, and, at convenient intervals, no fewer than fifteen places of egress. The horizontal measure of 24 feet, which formed a leading feature of the design of the Building Committee, is also preserved in the present plan. The avenues into which



THE UNITED STATES' DEPARTMENT.

HISTORY OF THE GREAT EXHIBITION.

the building is divided are formed by hollow cast-iron columns, 24 feet apart, which rise in one, two, or three stories respectively. In the lower story these columns are 19 feet high, and in the two upper ones 17 feet. Between the different columns short bars of iron, 3 feet in length, called "connecting pieces," from the use to which they are applied, are employed as supports to the girders in horizontal tiers, dividing the building, at its greatest height, into the three stories to which we have already referred. The girders, of which, some of cast, and some of wrought-iron, are all of the same depth, namely, 3 feet, with the exception of four; an arrangement by which the horizontal lines are preserved throughout.

The first impression conveyed to the mind of a visitor, inexperienced in the science of architecture, on entering the building, is a sense of insecurity, arising from the apparent lightness of its supports as compared with the vastness of its dimensions. But this feeling is soon dissipated when he is informed how acutely the strength of every separate part has been tested, and with what extreme care the connexion of all the supports with each other has been considered, so as to present the greatest possible combination of strength. The ratlines of a ship of war, and the wires of a suspension bridge, may have little retentive power *per se*, but when judiciously connected with other supports, offer a resistance which a superficial observer would be little likely to understand. The lightness of its proportions indicates, at a glance, the nature of the material which forms the main supports of the building; and whilst those which are vertical consist entirely of cast-iron, the horizontal "connecting pieces" and girders are constructed both of wrought and cast-iron. Of wrought-iron 550 tons have been employed; but of cast-iron Messrs. Fox and Henderson have used no fewer than 3500 tons. The whole

of the roof above the highest tier or story of iron frame-work, consists of wood and glass, and the external enclosures and face-work are composed, for the most part, of the same materials. In the entire edifice there have been employed 800,000 superficial feet of glass, and, including the flooring, 600,000 of wood. In those parts of the building which are two or more stories or tiers in height, the upper tiers do not support galleries, being only intended to give additional stability to the columns. The highest tier is in all cases devoted to the support of the roof; an arrangement which forms a rather remarkable feature of the edifice. Among other striking examples of the ingenuity of the originators and constructors of the Crystal Palace is the ridge-and-furrow roof, by which the rain water is distributed into equal portions, and all ordinary chances of overflow averted; and the peculiar formation of the floor, which is a "trellised wooden pathway," with spaces between each board through which, on sweeping, "the dust at once disappears, and falls into the vacuity below." It may also be thoroughly washed without discomfort, for the water disappears as fast as the dust through the interstices; and the boards become fit for visitors almost immediately afterwards. There is one drawback on its adoption, however, of which most visitors to the Exhibition must have had experience; wherever it is laid transversely it is extremely troublesome to walk over, be the boards ever so evenly placed. Into technical minutiae connected with the erection of the building, and the simplification of labour by its constructors, it is no part of our design to enter. Those who may be interested in such details, will find them duly set forth in the official records of the Commissioners. Many of them deserve praise for their ingenuity; and the speed enforced upon Messrs. Fox & Henderson, in the construction of the Crystal Palace, is the



THE HALL OF THE DELIVERED.

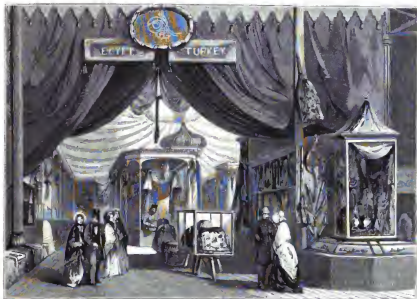
HISTORY OF THE GREAT EXHIBITION.

less to be deplored, as it necessitated experiments which have created important facilities for the builders of future edifices of this description. There are, however, some details yet to be recorded, without which the present sketch, although addressed to the general reader only, could hardly be considered complete. The total area of the ground floor is, as we have already stated, 772,784 square feet, and that of the galleries, 217,100 square feet. The extent of the latter is nearly a mile. The total cubic contents of the building are 34,000,000 feet; there are nearly 2300 cast-iron girders, and 358 wrought-iron trusses for supporting the galleries and roof; 30 miles of gutter for carrying water to the columns; 202 miles of sash bars; and 190,000 superficial feet of glass.

The decoration of the Exhibition of the Industry of all Nations was entrusted to Mr. Owen Jones, and some apprehensions were entertained, in the first instance, that the combination of deep blues, reds, and yellows, would produce too glaring an effect upon the eye. Mr. Jones has, however, by toning down his colours, and calculating the effect of a long perspective upon them, produced a result which has met with very general approbation. The outside of the building, which has not afforded him the advantages presented by the perspective of the interior, has not been considered quite so successful. At the east and west ends considerable spaces have been enclosed for the exhibition of objects, the weight and dimensions of which precluded their admittance within; among them, large blocks of marble, stone, slate, coal, asphaltic pavements, and garden and monumental ornaments. At the western end, and considerably beyond the recognised precincts of the Exhibition, is the fine colossal model for a statue of Richard Cœur de Lion, of the Baron Marchetti. About 165 feet from the north-west angle is an engine-house, 94 feet by 24, for generating the steam which gives motion to the various machines which require to be exhibited in operation. The external appearance of this

structure is similar in character to that of the main edifice. It contains five boilers, of 150 horse power, and a large tank, serving as a balance head to the water supply. With this is connected a six-inch main, which runs completely round the Exhibition, on which, at intervals of 240 feet, are placed fire-cocks; and, at different points in its circuit, 16 four-inch branch pipes supply the water requisite for the purposes of the building. The mains, which run along the north and south sides of the building, are connected across the transept by a five-inch main, from which, near the centre of the building, pipes branch out for the supply of the various fountains erected on the central line of the nave; nor has the more substantial convenience of the visitors been overlooked; large refreshment rooms and counters, with corresponding waiting-rooms, have been provided around the trees at the northern extremity of the transept, and adjoining the open courts, at the eastern and western ends. The official business of the Exhibition demanding the services of a large staff of clerks, ample accommodation has been provided for them in offices placed on each side of the southern entrance; whilst, for money and check-takers, readers of Catalogues, etc., a considerable space has been appropriated at the eastern and western extremities of the building, as well as on each side of the principal entrance.

Although all objections to the use of the site in Hyde Park by the Commissioners vanished as the building advanced towards completion, they had been compelled to bind themselves by a deed of covenant to remove it, and resign the ground into the hands of the Commissioners of Woods and Forests, within seven months after the close of the Exhibition. This agreement rendered an appeal to parliament indispensable. After much discussion, in both houses, and elsewhere, a respite of one year has been granted; an arrangement which appears to have been perfectly satisfactory to all, save a few dissentients who either reside or possess property in the immediate neighbourhood. Mr. Paxton's notion from the



ENTRÉE TO THE TURKISH DEPARTMENT.

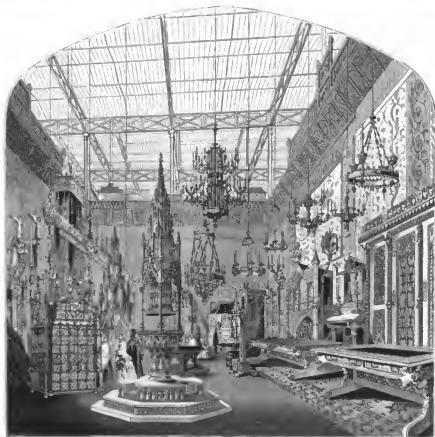
HISTORY OF THE GREAT EXHIBITION.

first appears to have been to convert it into a winter garden when it shall have answered its present purpose.

Whatever credit may be claimed by the Executive Committee, much is due to the contractors, Messrs. Fox and Henderson, for the almost superhuman exertions which were made by them to enable the commissioners to open the Exhibition on the 1st of May. Such was the extraordinary eagerness of the public to be present at its inauguration, that upwards of 40,000*l.* of season tickets were disposed of on the 29th of April; and but for the restriction that the holders of season tickets only should be admitted to this ceremony, the place would doubtless have overflowed with visitors. It is not our intention to enter into minute details of the circumstances which attended its inauguration; they were in every respect worthy of the occasion. It was opened by Her Majesty in person, accompanied by the Royal Family, and attended by the members of her cabinet, and by all the officers and ladies of her court. So soon as the music which hailed her entry had ceased, H.R.H. Prince Albert, as President of the Royal Commissioners, read a report of their proceedings since their

appointment. This manifesto mentions that "for the suggestion of the principle of this structure, the Commissioners are indebted to Mr. Joseph Paxton, and expresses a hope that the undertaking, which has for its end the promotion of all branches of human industry, and the strengthening of the bonds of peace and friendship among all nations of the earth, may, under God's blessing, conduce to the welfare of Her Majesty's people, and be long remembered among the brightest incidents of her peaceful and happy reign."

To this address, Her Majesty returned a most gracious answer, and the Archbishop of Canterbury having invoked the blessing of the Almighty on the undertaking, the ceremony terminated with the performance of the Hallelujah chorus by the united choir of the Chapel Royal, St. Paul's, Westminster Abbey, and St. George's Chapel, Windsor. The procession included all the persons who had been officially engaged in the work; the royal and foreign commissioners, Her Majesty's ministers, the whole of the lords and ladies of the court in waiting, and the foreign ambassadors. The vast but elegant proportions of the building, the richness and tastefulness of



OPENING OF THE RESIDENTIAL COURT.

HISTORY OF THE GREAT EXHIBITION.

the costumes, and the large number (25,000) of well-dressed persons assembled on the occasion, rendered its inauguration one of the most imposing sights that had ever been witnessed in this country. But it is not in her regal capacity alone that Her Majesty has designed to honour the Great Exhibition with her countenance. Day after day, accompanied by her children, and often at much personal inconvenience, has she flattered the various exhibitors by careful examinations of their productions; until it may fairly be presumed that there is scarcely one of her subjects who has more thoroughly inspected all that is worthy of attention within its walls than she has done. Whatever may have been the weather, or however crowded the interior, Her Majesty has devoted, almost daily, until the close of the session of parliament released her from attendance in London, several hours to visits to the Crystal Palace; inspecting each department in succession, and selecting from many of them such objects as gratified her taste, or were, for other reasons, considered to possess claims upon her attention.

On entering the building, for the first time, the eye is completely dazzled by the rich variety of hues which burst upon it on every side; and it is not until this partial bewilderment has subsided, that we are in a condition to appreciate as it deserves its real magnitude and the harmonious beauty of effect produced by the artistical arrangement of the glowing and varied hues which blaze along its grand and simple lines. After passing through the southern entrance, the whole extent of the transept, interrupted only by the magnificent glass fountain of Messrs. Osler, and the groups of sculpture and tropical plants and trees, that are intermixed throughout, flashes on the eye more like the fabled palace of Ystehk, than a structure reared in a few months by mortal hands. On either side, as well throughout its centre, are ranged groups of statuary by Baily, MacDowell, Foley, Marshall, Lough, Bell, Marchetti, Wray, Watson, Weeks, Haldia, Leggett, Earle, and other well-known English sculptors. Forming the centre, or nearly so, of the entire building, and dividing alike the transept and the nave, rises the gigantic fountain of Messrs. Osler, the culminating point of view from every quarter of the building; whilst at the northern end the eye is relieved by the verdure of tropical plants and the lofty and overshadowing branches of forest trees.

On the right, looking from Messrs. Osler's glass fountain up the Eastern Division of the Nave, towards the American organ and its enormous eagle, a combination of splendours bursts upon the sight of overpowering magnificence. Here, as in the Transept, the objects which first attract the eye are the sculptures, which are ranged on every side; some of them of colossal size and of unrivalled beauty, by Kiss, Simonis, Monti, Du Seigneur, Duchesne, Muller, Schwanthaler, Powers, and others. The Western Division of the Nave, devoted to the products of England and her Colonies, if less showy, on a superficial view, than its rival, has much of sterling merit to recommend it. Here, too, are interspersed statues, fountains, mirrors, organs, and other large ornamental objects.

Crossing the Transept, and pursuing our course to the left, we enter the western division of the nave. We have here the Indian Court, Africa, Canada, the West Indies, the Cape of Good Hope, the Medival Court, and the English Sculpture Court, including works of Gibson, Baily, Mac Dowell, Foley, Curw, Marshall, Belmes, Hegan, Bell, Jones, Stephens, Thorpey, Wilson, &c. These succeed Birmingham, the great British Furniture Court, Sheffield, and its hardware, the woollen and mixed fabrics, shawls, flax, and linens, and printing and dyeing. The long avenue leading from the Medival Court to the end of the building is devoted to general hardware, brass and iron-work of all kinds, locks, grates, &c.; whilst behind it, and parallel with it, but occupying three times its breadth, is the department for agricultural machines and implements. At the back of this division is the long narrow gallery occupied by the mineral products of England. Passing the small compartment of glass which runs transversely under the great organ gallery, across the nave, we have the cotton fabric and carriage courts, leather, furs, and hair, minerals and mineral manufactures, and machinery; including cotton and woollen power-looms in motion. The next is the largest compartment in the

building, comprising machinery in motion, flax, silk, and lace, rope-making lathe, tools, and mills; minerals and mineral manufactures, furniture, marine engines, ceilings, hydraulic presses, steam hammers, fire engines, &c. Then follow paper and stationery; Jersey, Ceylon, and Malta, with the Fine Arts Court behind them; railway and steam machinery in motion; building, contrivances, printing, and French machinery, occupying the whole of the last compartments on both sides the nave, as well as those which face the transept. Crossing to the left of the Crystal Fountain, we have Persia, Greece, Egypt, and Turkey, Spain, Portugal, Madeira and Italy, musical instruments, and chemicals; France, its tapestry, machinery, arms, and instruments, occupying two large courts; Belgium, her furniture, carpets, and machinery; Austria, with her gorgeous furniture courts, and machinery furniture, the Zollverein, with its octagon room, the most tastefully-arranged compartment in the building; North of Germany and Hanse Towns; Russia, with its malachite doors, vases, and ornaments; and the United States, with its agricultural implements, raw materials, &c., occupying all that part of the nave which terminates with its organ, if we except a small gallery on the north-east side, devoted to English paper-hangings. From this extremity of the building, and from the organ gallery more especially, the finest view of the nave and its adjoining galleries may be obtained.

Crossing once more the nave on our return, we pass from the United States to Sweden, part of Russia, Denmark, another division of the Zollverein, Russian cloths, hats, and carpets, Prussian fabrics, Saxony, and the Austrian sculpture court; Austria running back side by side with Belgium, the whole way. Next succeeds another division of France, with its splendid frontage of articles of *arts* and ornamental furniture, its magnificent court for pine, hives, and china; its tasteful furniture, and carpets, its jewels, including those of the Queen of Spain; its lace, gloves, and rich embroideries; Switzerland, China, and Tunis, terminate this half of the nave.

Among the more striking objects in the south-eastern gallery, in the British half of the nave, are the silks and shawls, abutting on the transept; lace and embroideries, jewellery, and clocks and watches; and behind these military arms and models, raw produce, substances used as food, and chemicals. Traversing the gallery for naval architecture, by the organ, we have philosophical instruments, civil engineering, architecture and building models, musical instruments, anatomical models, glass chandeliers, decorations, &c.; china, cutlery, and animal and vegetable manufactures, and china and pottery above the left side of the northern part of the transept. On the opposite side, in the north-eastern gallery, are perfumery, toys, fishing materials, miscellaneous articles, wax flowers, stained glass, British, French, Austrian, Belgian, Prussian, Bavarian, and American products.

Clear passages under the galleries, of eight and ten feet broad, run the whole length of the building. Upon the extreme north and south sides, there are also longitudinal passages of similar width; the former interrupted by the offices of the commissioners and the entrances, and the latter by the refreshment rooms. With the exception of the offices, staircases, entrances, refreshment courts, and the various arcades and passages, including the transept, the whole of the ground-floor and galleries are available for exhibitors. As we have already shown, foreign countries, including the United States of America, occupy the east side of the transept above and below; whilst the United Kingdom, the East Indies, and the British Colonies are confined to the west side; with the exception of the United Kingdom, which extends into parts of the north and south galleries, on the east side of the transept. The productions of England and her Colonies occupy thirty separate sections. Of the four main departments into which it is divided, machinery occupies the north side, raw materials and produce the south side, and manufactures and the fine arts the centre. Along the central passage, to the west of the transept, a frontage on each side, of seven bays, or 168 feet, is devoted to the production of the Colonies.

In retiring from the contemplation of this magnificent edifice, the extraordinary expedition with which it was constructed must be regarded as one of the marvels of the age.

HISTORY OF THE GREAT EXHIBITION.

The tenders of the contractors were not, it is stated, accepted by the Royal Commissioners until the 20th of July, 1850; the possession of the site was only obtained on the 30th of the same month, and the first column was not fixed until the 28th of September, leaving only seven months for its completion. When we remember the elaborate calculations that were necessary before the iron and wood-work of the building could be put in hand, the machines for economising labour that had to be devised and manufactured, and the contracts for materials to be entered into, and the thousands of hands that had to be set to work, the celerity with which the building was completed is one of the most remarkable features of its history.

In the sketch which we have here given of the history of the Great Exhibition, from its origin to the present time, we have confined ourselves exclusively to facts; having carefully avoided making it the vehicle of opinions of any kind. This restriction, and the limited amount of space at our disposal, have prevented us from entering upon many topics which might otherwise have diversified our narrative, and relieved the monotony inseparable from the compression, into a few pages, of the great body of facts we have been called upon to enumerate. All questions inviting discussion would have been out of place in a narrative like this, which aims simply at presenting a brief, but faithful, history of one of the most splendid and remarkable undertakings that has ever been attempted in this or any other country.

We have left all controversy on the plans and arrangements of the Royal Commissioners, and the officials with whom they have associated themselves, to the *Art-Journal*, without the aid of whose staff it would have been impossible for us, or, indeed, for any one else, to have produced the present volume, at anything like the price at which it is now published. With the composition of the juries, or the principle on which they arrive at their verdicts, and all the topics to which such an inquiry would of necessity conduct us, we shall have nothing to do on the present occasion. The *Art-Journal* has displayed no want of courage in dealing with such subjects, or in protecting the interests of the great body of British exhibitors from the effects of that overstrained courtesy which seems to consider that the rights of hospitality demand sacrifices on the part of their English competitors, which are alike inconsistent with reason or with justice. We have, moreover, no official knowledge of the manner in which the respective juries have been awarded, and possess, therefore, no correct data for speculation on the subject; much will depend not only on the impartiality, but competency of the various jurors for the duty they have undertaken, and their perfect freedom from national jealousy or bias of any kind. Whether or not this great enterprise will be productive of the unimagined good which has been anticipated from its present success, its effects on the general trade and commerce of the country cannot have been as injurious as some persons profess to think; but it may be questioned if it have not

benefited some classes at the expense of others. How far the glut on the English market, of all kinds of ornamental goods, when the Exhibition has closed, may be atoned for by the increased stimulus which their excellence may have given to the British manufacture remains to be seen. The question has been often asked, what is to be done with the Crystal Palace; but the graver inquiry would seem to be, what is to be done with its contents? A very large proportion of them will, in all probability, be sold for what they will fetch; and if so, with what effect upon the trade of the British metropolis?

A partial injury at most; whilst the benefits arising out of the Exhibition are certain to prove both important and permanent. It will encourage us in the prosecution of those arts in which we are in the ascendant, and show us our weakness in those branches of industry in which we may be behind our neighbours. To be aware of our deficiencies is the first step towards amending them; and there is no maxim safer than that which teaches us not to undervalue our rivals: our Industrial Exhibition will have had this good effect at least.

The extent to which this congress of the world's genius and industry has already promoted the objects of civilisation and of peace, may be seen in the cordial feelings with which England and France are now inspired towards each other; and the noble spirit of emulation, devoid of its former rancorous prejudices, which it has generated between them. We need scarcely refer more particularly to the splendid and cordial reception given by the great body of savans and men of science of France to a large assemblage of English gentlemen (most of them identified in some way or other with the Exhibition), at the Hôtel de Ville of Paris, in the early part of August; and the strong and grateful impression it has left upon the minds of all who had the opportunity of participating in it. So noble a demonstration of mutual good feeling cannot fail to form an era in the histories of both countries; realising, as it did, so completely the language of Bismarck's charming song, written when the prejudices and antipathies of the two nations were at boiling heat—

"*J'ai vu le Paix descendre sur le tronc,
Régner de l'un, des fleurs, et des épis.
L'air était calme, et du dard de la guerre,
Elle éteignait les foudres assoupis.*"

"*Al! disais-elle, 'épous par la victoire,
Francs, Anglais, Belges, Russes, ou Germains,
Peuples formez une sainte alliance,
Et donnez-vous la main!*"

"*Où, libre enfin, que le monde respire,
Sur le passé jete un voile éternel,
Sont vos champs aux accords de la terre,
L'événement des ans doit briller pour la paix.
L'espérance en suite de l'abolition,
Accueillir les doux fruits de l'union.
Peuples formez une sainte alliance,
Et donnez-vous la main!"*



The Art-Journal ILLUSTRATED CATALOGUE of the INDUSTRY of all NATIONS

THE Works of Mr. ALFRED W. COPLAND, for the manufacture of PORCELAIN and EARTHENWARE, are at Stoke-upon-Trent,—the principal town of commonest article of earthenware—manufactured for exportation by tens of thousands. The compartment allotted to Mr. Copland in the Exhibition cannot fail to be universally attractive,—not alone because of the grace and beauty



the Staffordshire potteries, his London establishment is in New Bond Street. The artist who presides over the works is Mr. Thomas



Batman, whose taste, judgment, and experience have been largely exercised to secure for this manufactory the high reputation it enjoys, not only in England, but throughout Europe, in Asia, and in America. The list of the Alderman's productions comprises all classes of "goods"—from the stately porcelain figure and the elaborately decorated vase, to the



of the articles shown, but as exhibiting our progress in a class of art upon which much of our commercial prosperity must depend. The collection will be carefully examined, and by foreigners especially, who will find much to admire, and much



that will by no means suffer in comparison with the best productions of Dresden and Sevres—always bearing in mind that at these Royal works objects are occasionally produced at national cost; such as those now to be found upon the stalls allotted to these famous factories; and that to expect private enterprise to enter into competition with them would be neither reasonable nor fair. At the same time it is only

THE INDUSTRY OF ALL NATIONS.

right to say, that Mr. Copeland challenges a comparison between his productions and those of either Dresden or Sevres—in so far as ceramic articles made especially for trade—and that from such comparison he does not shrink as regards either the materials, its ornamentation, or its price. We have devoted to the works of Adler-

man Copeland a larger space than we shall be able to accord generally even to manufacturers of the first order; but his works are very numerous and excellent, and although we assume to have selected the best, we have left unrepresented a mass of interesting and beautiful productions. For instance, out of forty statuettes in statuary

man. The statuette of Sappho is from the



porcelain, we engrave but two—the "Sappho," after Thied; and the "Bacchus and Ivo," after Foley; setting aside the "Sabina," after Marshall; the "Indian and the Negro," after Cumberland; the "Venus," after Gibson, and

others of great merit and beauty formed in this valuable material. The vase, called "THE DOVE TABULA," which commences the preceding page, is a superb ornament, peculiarly adapted for general purposes of elegant decoration; it is



executed in fine porcelain: the doves, from the celebrated doves of the Capitol, together with the festoons of flowers, and the embossment generally, are richly gilt. On the same page,



are a FINESTAND, formed of the foliage of the pine, and a BRACKET, called the IVI BRACKET. The EVER AND BARK which commences this page are in the Greek style, with outlines after Flax-



original, by M. Thied,—an artist of high ability.



who has been for a long time resident in Rome.

ART-JOURNAL ILLUSTRATED CATALOGUE

The figure is, we believe, the largest yet



attempted in this style of Art-manufacture, being



about thirty-four inches high. The PANEL FOR



a FIREPLACE, is one of a series of admirable

designs in this class of manufacture, for which this house is so justly eminent: the foliated

scroll panels and works are enamelled on a gold ground, the centre subjects in colours on black.



and the outer borders enriched with enamel and burnished gold, relieved with blue: the effect is



extremely rich and harmonious. The concluding

object on the second page is a JEU DE D'ECHESS

THE INDUSTRY OF ALL NATIONS.

form, graceful in outline, and ornamented with floriated decorations and antique enrichments.

The first subject on the third page is a BRACKET, called the "Cupid Bracket." It is followed by a TAPERED FLOWER-STAND, a very satisfactory production, and one which, with reference to its size as well as work, we have



not been equaled in the beautiful material of which it is composed, viz., antique porcelain; there is much classic elegance in the design, and the execution of its components is, in the highest degree, satisfactory. Following this is a Vase of much beauty and of the succeeding columns are pictured, first the "Euclypus and Ios," of Foley—a very triumph of Art,

and next a GROUP OF OBJECTS FOR THE CONSERVATION, consisting of Vases, Flower-pots, and Potestals for the vase. The next to



which these useful ornaments are intended to be applied require no explanation: it is sufficient to point out their merits as elegant



inures for the wealthy. The first engraving on this page is a Vase and Potestals, of blue and white porcelain, standing together



about five feet high: the proportions of the column have been well studied, and the base of a triangular form, exhibits at each angle

a work of considerable dimensions. These objects are succeeded by a TAZZA in the Italian style, a kind of AMPHORA, or water-bottle, of antique form and decoration, and by a GARDEN SEAT, the latter ornamented with a bas-relief of classically designed figures. The last subject is a PANEL for a fireplace, simply but tastefully embellished with coloured designs: the ap-



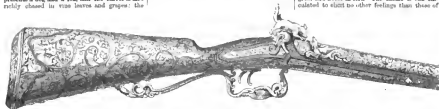
plication of the plastic arts to domestic architecture, is now becoming very general in houses of a superior class. In all the examples here brought forward there is undoubted evidence that the mind of the artist has been at work to accomplish the task of uniting beauty with utility, by a skilful adaptation of what may be gathered from the past to the tastes and requirements of the present generation, however varied and exacting.

ART-JOURNAL ILLUSTRATED CATALOGUE

We engrave on this page two beautiful objects contributed by M. Le Pape-Montier, of Paris,—a *FOURING-PINCE* and a *SAINT*, both exquisitely wrought. The stock of the former is elaborated with designs, in which the ivy forms a prominent feature; the lock is chased, and represents a dog and a fox, and the barrel is also richly chased in vine leaves and grapes: the

work is altogether worthy of the best period of the middle ages, when offensive weapons of all kinds seem to have been made as much for ornament as for use. The shield is an extraordinary piece of workmanship, chased by the artist Vazier in metal, in the boldest and most vigorous style.

The subject represented is the "Massacre of the Innocents," and the designs are copied from some of the best works of the old masters,—Raphael, Poussin, &c.; it seems, therefore, almost unnecessary to dilate upon what has emanated from such sources, the fountain of all that is great and noble in Art. The theme is one calculated to elicit no other feelings than those of



horror and detestation, but it affords abundant scope for the display of bold action and most effective grouping. Unlike a field of military combats, where man meets man in deadly struggle, and each feels that life or death depends, perhaps, on the strength of his own right hand, the rage and fury are here on one side only, the

despair and agony on the other. Still there is no quiet submission—no resistless surrender of the little ones, to those who are executing the commands of the tyrant. It is this mingling together of men, women, and children, their variety of attitudes, induced by the difference of purpose which places them in action, the strength of arm

that emboldens the warrior, the power of maternal love that animates the mother, which make any representation of the "Murder of the Innocents" a picture such as no other historical event can furnish. M. Le Pape-Montier has acquired as a manufacturer of the most easily and excellent fire-arms, swords, &c., the reputa-



tion of being among the first, if not the very first, in France; we visited his establishment a few months ago, when a large variety of his

productions were submitted to our inspection; the only regret we felt on the occasion was, that so much talent and labour should be bestowed

on the art that destroys, instead of upon that which aims to preserve mankind, and to elevate the moral and social condition of humanity.

THE INDUSTRY OF ALL NATIONS.

The establishment of Mr. HARDWARE, of Derby—the "Britannia Foundry"—is principally represented by the elegant iron vase which we

examine. It is of very large size and elegant character. The body of the vase is decorated with an elaborate interlaced design, which we

Among the specimens of excellent iron-work exhibited by M. GROS, HARTY, of Paris are some beautiful Crosses, of which we engrave



have engraved above it. The base is an octagon, having eight open-work screens hanging in front of the pedestal, which give singular lightness

and elegance to the entire object. As an example of the taste and improvement which characterizes the iron manufactures of our own



country, we believe our readers will consider this work deserving of much attention; it is an excellent design, as excellently worked out, and

reflects credit on the establishment from which it has originated—one that from the magnitude of its operations is second to none in England.



two, chiefly as suggestions in ornamental design for our own manufacturers. They are character-



terized by much lightness and elegance of outline, while the iron portions are "rolled in" so as to add to the general richness of the design.

ART-JOURNAL ILLUSTRATED CATALOGUE.

The appended engraving is of the plan of a *Candelabrum*, manufactured by M. Brochon, Paris, for the Strasbourg Railway. It is of cast iron, and will be much admired for its elegant proportions, and its artistic details; the shaft rises in gothic flutes from a decorated base, which is again followed by ornamental work of similar character, but varied in form and design, having fruit inter-



mingled with the leaves. The pedestal exhibits several projecting ornaments, terminating at the top by what would seem to be the heads of the panther. The whole column shows that much artistic taste has been expended upon its construction; it is of very considerable height, and altogether reflects great credit upon M. Brochon's establishment, which is one of the most important, for iron-work of all kinds, in Paris.

Munich, famous for its school of *Painting on Glass*, contributes to example of it to the Exhibition; the fame of Bavaria in this department of Art is upheld only by Meissner, Kellner, of Nuremberg, who contribute a copy of the "Valkammer Window,"—the glory of the Lorenzen Kirche, of that renowned city. It is not known who composed this votive offering of the Valkammer family, but the general opinion seems to be that when the design was decided upon, several artists assisted in preparing it. The figure-subjects are taken from the Old and New Testa-

ments. The figures kneeling at the lower portion of the window represent the various members of the Valkammer family. The minor divisions are filled up with florid architectural ornaments and scriptural illustrations; and in the upper compartment is represented the Holy Trinity, surrounded by a choir of angels. The dimensions are 20 feet by 15 feet; we engrave only a part of it. In this work, whether we regard its technical superiority, the richness of its composition, or the extraordinary blending of colour which it presents, all has been achieved with



could possibly be expected even from the gifted days when it was created. It was a deep sense of those rare recollections that induced M. Stephen Kellner to make a copy of the window, as faithful as possible, both in drawing and colour; and all who have seen the beautiful original, must consider that he has succeeded in admiration. He is one of the sons of Jacob Kallner, of Nuremberg, whose family are much renowned as glass-painters, and have produced some of the most beautiful specimens

of modern art. They are thoroughly acquainted with the style and characteristics of the middle ages, so the many excellent copies they have executed testify. Their prices are very moderate, being from twelve to fifteen shillings (20s. to 25s.) per square foot, according to the nature of the design. Their establishment in Nuremberg,—which we visited in the summer of 1856—is well worthy the attention of church-builders, and, indeed, also of private gentlemen who desire to decorate their houses.

ART-JOURNAL ILLUSTRATED CATALOGUE

The CAST-IRON FIRE WAGON, as might be expected, from the magnitude and high character of the establishment, are worthily represented in the Exhibition. The first of our examples is a *GRAND VASE*, of cast iron, with scrolls and bas-reliefs of novel design; it



stands on a marble pedestal, measuring altogether about three feet in height, and is adapted for flowers or for a fountain. This is followed by another *GRAND VASE*, with serpent handles, in



which is placed an earthen pot for flowers. The next object is an *Elizabethan LOOKING-GLASS*, two

feet nine inches high, finished in white and gold, with branches for six lights; the pattern of this

frame merits all commendation. Below this is an ornamental *FLOWER-POT STAND*, four feet high,



complete with the pots in china. The first two elegant *VASE* and *FIREWAGON*, in which floriated engravings on the next page are copied from an



ART-JOURNAL ILLUSTRATED CATALOGUE.

simplicity in the general character of the form and other ornaments which decorate the sur-

face of these choice works; and we rejoice to see this eminent house again prepared to assert

command; and the re-awakened attention which will be insured, to one of the most famed and tasteful of



its position among the principal Art-manufactures

sent by the famous Josiah Wedgwood. These



turns of the present day; attesting to the deserved character obtained for the establish-



ments are all carefully and beautifully executed, and deserve the high praise they will



English establishments, in connection with plastic art.



THE INDUSTRY OF ALL NATIONS.

We commence this page with a group composed of CANDLESTICKS, TABLE LAMPS, and a GAS-GRATE, selected from a variety of articles of a similar description contributed by Messrs. SALT

& LLOYD, of Birmingham. In all these objects the designer has had recourse to nature for the ornaments with which they are enriched. It would not, probably, be very difficult to point

out where these ornaments might have been more effectively and tastefully disposed; but still there is much in the general character of the designs that will meet approval, and exhibit



the advance which, within a few years, has been made by the manufacturers of Birmingham. One great error against which it is necessary to guard British manufacturers of ornamental articles, is the too free introduction of decoration; elegance is more often united to simplicity than fitted with abundance: symmetry and beauty of form must never be sacrificed to a profuse display of ornament. These remarks are not made with refer-

ence to the objects here engraved, but are thrown out as hints to our manufacturers generally. The edifices and works of Art which Greece pro-

duced, when she had reached the highest point of refinement and civilisation, were remarkable for their elegant simplicity. It was not till luxury had exalted her powers, and wealth had created an overabundance, that she lost her purity of taste and became fatal, even to grandeur, of the resources at her command. It is to the earlier periods of the history of that country one looks for all that is great in Art.



A SIDEBOARD of mahogany, selected from the contributions of Messrs. JONESTON & JENNS, of London, is entitled to high commendation for the pure taste which the manufacturers have exhibited in its construction. The style is Italian

of the best period, not over-ornamented, yet showing an abundance of choice decoration, which may be thus briefly described. At each end is a young Fauchas; one, placed on a lion, holds up a bunch of grapes to the other, who, stretched

out a cup to receive it; these figures are carved with much spirit. In the centre of the back piece is a medallion of a Bacchante, and at each corner one of a Fauchas; the interventions being filled in with wreaths of the grape-vine and its fruit.

ART-JOURNAL ILLUSTRATED CATALOGUE.

The WINE COOLER, exhibited by M. ECHLER, of Berlin, is of terra-cotta; it may be accepted as a proof of the great excellence so frequently given by competent artists to ordinary objects of commerce. In composition, grouping, drawing, and entire arrangement, few more perfect works than this have been produced in the previous metals: yet, upon this common material, so much fine taste and intellectual labour have been expended as to give it high value as a work of pure and true Art.



A silver-mounted MEERSCHAUM, by M. HELL, of Nuremberg, representing St. George and the Dragon. We have selected for engraving this out of several drawings sent us by one of the most successful manufacturers of Germany. The article is one upon which much ingenuity is expended; it is often embellished with great skill and taste, and is not unfrequently made costly by the extensive of artistic talent; indeed, a very large proportion of the young Art of Germany is employed in modelling, carving, or decorating these meerschauken. In Germany there are few more productive articles of trade; they are exhibited in the greatest shops, and their consumption is generally extensive as well as beautiful.



The FRAME of CARLOS FERNAN, with the brackets and medallions enclosed in it, are the contributions of Messrs. GORRIS, of Berlin. Their establishment is renowned throughout Germany;

they have obtained rewards for the quality and durability of their material as well as for the excellence of their models; it is known, indeed, that they are assisted by several accomplished

artists. When we visited their extensive works and show-rooms, in the summer of 1850, we examined a vast variety of fine compositions in brackets, statuettes, picture and looking-glass



frames, &c., as in all such cases of manufacture, a large portion of the merit of the manufacturer consists in the skill with which he composes his

materials—the judicious mixture of the component parts; still, as in this instance, celebrity is to be obtained also by employing good artists to

produce good models: the collection exhibited by Messrs. GORRIS cannot fail to be appreciated; its introduction into England is desirable.

ART-JOURNAL ILLUSTRATED CATALOGUE

We stated, in our preliminary remarks on Mr. Potts's contributions, that to our had done so much to advance the character of the Birmingham bronze and brass works as the intelligent and enterprising manufacturer. To him is not be ascribed the merit of having first introduced a new combination of artistic media, which has

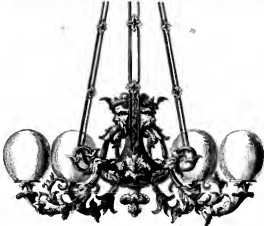


since been followed up by others with no little success, though Mr. Potts has still kept the lead in his hands. We allude to the application of a certain substance, statutory porcelain, for ornamental purposes in conjunction with metal, in



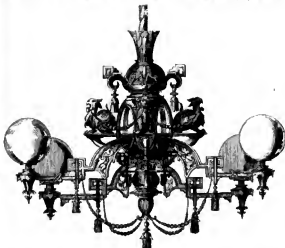
chandelier lustres, lamp brackets, and numerous other objects of utility and decoration. This introduction has given a vast surprise to the Industrial Arts, proceeding as it does a valuable auxiliary which may, in unbroken or spangled ornaments, minister most faithfully to elevate

and enrich the particular branch to which it may be applied. But it is requisite to use it with the utmost discrimination and judgment, inasmuch as it might otherwise lead to the perpetration of much that is offensive to the taste. The charm of novelty tames the talent of the designer most severely, and often compels him to pro-



determine what is, and what is not, to be produced, should be well skilled in those principles by which such desirable ends may be attained; each should habituate himself to considering the effect of every pattern in different materials and articles. Above all, the designer should be

taught that his principles are to be found only in the very highest art. The designer must, in mental power, be raised to the level of the artist, and must emulate him, not only in skill, but in range of information. But we must proceed to notice the remaining objects we have



selected from Mr. Potts's contributions as exhibited on this page. The first is a light and elegant CHANDELIER for two or four lights; it is designed after the best examples of the antique. By its side is a richly ornamented GAS CHANDELIER in the Italian style of decoration,

the scrolls being surmounted by grotesque masks. The two engravings below then represent another GAS CHANDELIER and its Pendant; the style of this work displays a bold arrangement of curves, and angles, and is altogether a beautiful example of metallurgical manufacturing art.

THE INDUSTRY OF ALL NATIONS

The silver works of Mr. Huggins, of London, are such as come within the province rather of a spoon and fork manufacturer than of a maker of



silver plate. From his very numerous contributions we select several, chiefly commending



these designs which are taken exclusively from natural objects, and we may remark that

the articles which Mr. Higgins exhibits, as specimens of his best ordinary production, are worthy of more public attention than such as have been



prepared expressly for the present occasion. Our illustrations commence with an APOSTLE SPOON, surmounted by a figure of St. Peter, being one of a series of twelve, which are elevated on a rotatory pedestal. With this is a simple but graceful DINNER FORK, of which the stem and prongs are of silver in imitation of twisted



branches, and the handle composed of again. On the opposite side of the page are a DINNER

spoon and a DINNER FORK taken from different sets, one composed of vine branches and the other of conventional ornament. In the centre



column we engrave a light and elegant CREAM LAMPS, the design of which appropriately consists of stems, leaves, and flowers of the common buttercup. The plant is fashioned for its purpose



with the best possible taste, and the effect of the work is greatly enhanced by the gilding, which

ART-JOURNAL ILLUSTRATED CATALOGUE

is only introduced in the cavities of the flowers. Un-derneath the circlet which, when per-



fruted in the bowl, may be employed as a sugar-spoon, are two small spoons, one a TARA-SPOON, ornamented with convolvulus, and the other an EUCALYPTUS, chiefly remarkable for the novel form of the bowl, which is both pleasing to the eye and agreeable to the lip. The two remain- ing subjects are CANNY-SPOONS, of beautiful star-



phony. We especially admire the shell, to which clings a spray of woad resembling the small water-lily. The flowers and the interior of the shell are gilt. Its companion is also worthy of

much praise, though a more wild acanthis gathered in the fields, and copied with as much fidelity as its application to the form of a candy-spoon would permit. The first group on the present page are two KNIFE-HANDLES; the first made of ivory, and decorated with vine leaves and bunches of grapes; the second of



silver, with ornaments of a conventional charac- ter: both are distinguished by considerable elegance. Next follows a SILVER-HANDLES, in the Italian style; the introduction of the lips

is very effective and graceful. On the top of the second column are a PAIR of ICE-TONGS and a



Spoons for helping this article of luxury; the form and ornamentation of the first of these objects exhibit great originality; the second, with the figure terminating the handle and its im- like bowl, possesses much beauty of design. A PAIR of ICE-TONGS commences the third column; they are decorated with the vine-branch, its foliage, and fruit. A TARA-SPOON succeeds to this: in it the designer has also had recourse



to the productions of nature for the form and character of his subject. The page is completed by a PAIR of CARVES of massive design, somewhat resembling the Moorish; we admire this as a deviation from the ordinary forms of such objects, as well as for its own intrinsic merit. There is not one of the subjects we have engraved on these



two pages that is not worthy of the best period of manufacturing Art; whenever produced, an undoubted proof of the advanced state of taste and ingenuity on the part of our designers and these associated with them in carrying out their

intentions. It is gratifying to see British manu- facturers taking advantage of the often in- cubed maxim that "to nature alone must we look for beauty, and the nearer the approach to

her creations the more striking the success;" it is a truth ever to be remembered by the designer.

THE INDUSTRY OF ALL NATIONS.

We occupy the present page with some examples of INDIAN MANUFACTURE, exhibited by Capt. H. C. JAMES, of the Bengal army. They were brought by him from India, and are curiously characteristic of Eastern taste. The papier-mâché tray was made in Cutchmore, and is entirely painted by hand, in a most elaborate style, labour of this kind being of very little value there. The vase beneath is constructed of

over apartments; it was taken at the capture of

being peculiar to that country. On the opposite side of our page is the case of a small compass, carried by Mahomedans in India when travelling. It is made of a kind of bronze, inlaid with silver; the inscription contains the names of Mahomet and his two brothers. The compass within it is in the shape of a flying bird, whose head points to the west or Mecca, and tells in what direction the bearer



a composition of metal and clay, called "bidder," of a very dark red, and is inlaid with thin



lathes, and is believed to have belonged to some of H-thar's household. The brooch is used by the women in Chinese Tartary to fasten their plaid shawls over their shoulders. It is generally made of brass; its chief curiosity con-



ought to turn his face to pray. The magnet is, of course, in the right wing of the bird.



pieces of silver; such vessels are generally used to hold water, and are chiefly manufactured at Singpo-

site in its rim, which, in the original, is nine inches and a half by seven inches. The gold ring

The cut at the foot of the page exhibits the pattern of a Cashmere covering for a couch;



poor, in Bengal. The very elegant silver vase, with the chain attached, is used to sprinkle rose-water

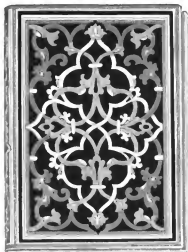
is of the fashion of those commonly worn by the better class of natives in Cashmere, the pattern

the ornament is stitched over a light blue silk, which gives it a peculiarly delicate tone.

ART-JOURNAL ILLUSTRATED CATALOGUE.

Mr. J. & Evans, of London, contributes two ALGERA COVERS the work of his son, Mr. J. W. Evans. The first is a small quarto, richly illuminated in gold and various colours on brown

leather; and we should, perhaps, mention that while the black, which forms the field, is a positive dye, the remaining colours are enamelled. The design is taken from an original specimen



of the time of Henry II. of France. The interior of each cover is of white vellum, elegantly tooled in gold, from a pattern by Mr. W. Harry Rogers.

The second is a royal quarto, of brown Russia, laid with black kid, a novel process as applied to rich workmanship, though not unusual in



simple book-binding. The design, in harmony with the colours of the materials employed, is in the Etruscan style, and is from a drawing by

Mr. Rogers. A vase occupies the centre, and the border and corners are composed of Archaic foliage, in which the honeyuckle is prominent.

The CURTAIN-RIN and CORNER FOLD-ROSE in this column, are contributed by Mr. HARRIS, of Birmingham, whose manufactory is eminent



for all kinds of stamped metal goods, such as those we have engraved, door-furniture, coffin-furniture, &c. In the subjects we have selected,



floral decoration has been resorted to with considerable success, and with sufficient taste to give the flowers a true and natural position, as



we see in the blue-bells introduced into the third design, and the bunches of hops in that which precedes it. In the manufactured articles them-



selves, we find a sharpness and accuracy of detail that prove the amazing power of the stamping machine to produce so desirable a result.

ART-JOURNAL ILLUSTRATED CATALOGUE

these engravings are executed, with expressions of regret that his country will not be more



worthily represented. The cups are of Pur-



celain, formed upon the old German models, and



beautifully ornamented in colours and gold, por-
tions of the decoration being in relief.

The two FIRE-GRATES engraved on this page are from the manufactory of Messrs. STUART and HARRIS, known as "Rensselaer Place," BUFFALO, an establishment which ranks high among those of that famous industrial town. They are made upon the principle known as "Hyvaster's," whose invention formed an era in domestic economy

and comfort. Their superiority over the old-fashioned grates has become widely tested by their very general use; these latter were so constructed that the larger portion of the heat passed up the chimney, from the fuel being placed so high, and, as a consequence, the lower part of the room was invariably cold, a condition



directly opposed to health and comfort; it is obvious that the principle of convection must be lost which throws the greatest heat where it is most required, and this is mainly effected by the invention of Mr. Hyvaster. The first ex-

ample engraved is distinguished by the makers as a "Trefoil Grate," from the shape of its outer frame; it is composed partly of "dead" steel, and partly of burnished, with ornate enrichments. The object of its ornamentation has



been to create a style of decoration from nature, without the introduction of mere conventional forms. The other, in the medieval style, is designed by Mr. H. Danbury, an architect of ability, who has shown much taste and ingenuity

in adapting this style to its required purpose. The extensive collections of Messrs. Stuart and Harris exhibit a large variety of this description of manufactures, displaying enterprise, taste, and clever mechanical execution.

THE INDUSTRY OF ALL NATIONS.

The five engravings of KEY RINGS on this column, are selections from the contributions of Mr. JAMES CURRIE, London; whose safety locks and improved keys have become famous, not only in England but throughout Europe. He



has devoted much attention to those improvements which may be described as restraints;



taking the best antique models, and, in some instances refining even upon them; he has thus



substituted forms of much elegance for the original shapes to which we have been accus-



tomed, yet in no way to lessen the ease with which the object may be used. The articles



he contributes cannot fail to augment the high reputation he has laboured for and acquired.

The CRY GLASS DIAL and COVER which we here engrave are productions of M. DIZACKEL, of Antwerp, and are chiefly remarkable for the peculiarity of design which they present, and which is of a novel



character. Glass is peculiarly susceptible of angular decoration; and this dial and cover are ornamented with figures designed to give the fullest amount of permanent beauty of which the material is capable.



The establishment of MM. GARNIER, PÉRON, Paris, has attained deserved celebrity for the manufacture



of CHANDELIERE and LAMPS of every description, exhibiting a very large amount of this artistic

talent in design for which the French have long since made themselves famous. We are well acquainted with the show rooms of this firm, and can truly state that we have rarely seen so many beautiful objects of their kind, brought together as they exhibit; the metals used are principally bronze, brass, and or-molu. The chandelier engraved below is exceedingly rich in ornament, but by no means overloaded; the tripod forming the base has at each angle a demi figure of grotesque character; above this, to conceal the plain shaft, are three female figures standing on an ornamental platform, which figures may be regarded as caricatures or supports to the higher parts of the composition.



those we consider very elegant both in form and decoration. The lamp which forms the subject of the other engraving is intended to be fixed to a wall; the design strictly belongs to any definite school or period, but is rather of a mixed character, yet so harmoniously put together that no incongruity is apparent in it. The contributions of this class from France are numerous and many of them, highly suggestive; it is, however, needless to point attention to this fact, the works sufficiently commend themselves by their variety and excellence.

ART-JOURNAL ILLUSTRATED CATALOGUE

The ZEUS CARTOONS of GIESS of Berlin are very numerous, although his contributions to the Exhibition are limited; they comprise a variety of objects, chiefly for the purposes of the archi-

tect,—capitals, cornices, &c. Zinc has been hitherto very little used in England; in Prussia, however, it has been resorted to, more or less, in nearly every structure of modern erection. M. Gies has devoted his attention chiefly to the produce of statues in zinc; the purity of the casts, the perfection of the chiselling, and durability of the material, combine to recommend it, while the cost of zinc, thus adopted, is about

one-eighth of the cost of bronze. We select for engraving the famous "Assassins" of Professor Koss, of Berlin; the original, in bronze, forms the entrance to the New Museum, at Berlin. The copy exhibited is life size; one of half life-size has been also produced by M. Gies. We have no doubt that the exhibition of these statues, so admirably calculated for gardens in England, will be followed by a large importation of similar works. We counted above twenty in the studios of M. Gies; among them Baily's "Eve," "The Boy and Swan" of Kalide, the *Stages of Raneb*, with several copies after *Ulmora*, *Thorvaldsen*, and the more famous works of the antique.



We engrave on this page two of the CAST IRON BRACELETS of DEYERANNE, of Berlin, works as meritorious in their way, and as true examples

graceful productions of Berlin have for a very

we are rightly informed, to the peculiar nature of the said into which the metal is poured, for this iron principally used is obtained from English



of Art, as the great life-size statue of Professor Koss. M. Deyerranne contributes not only these miniature wonders in cast iron, but also

minors. The collection exhibited by M. Deyerranne will attract universal attention; they consist of necklaces, brooches, bracelets, pins, and



gigantic castings in zinc, of which some specimens appear in another part of our Journal. These

long period retained celebrity; nothing of iron has been cast so skillfully elsewhere, owing, of

other objects so skillfully designed and delicately wrought as to be absolute marvels of Fine Art.

THE INDUSTRY OF ALL NATIONS.

The **PILLAR**, surmounted by a group, and the **TABLE** which commences the main column, are from the **ROYAL IRON FOUNDRY OF BESSEY**; they are, of course, made of cast iron. This establishment is under the immediate direction of the Government. The pillar is designed by Professor Struck; the base shows a clan triped, from which rises a shaft entwined upwards by a trial of graceful figures, terminating in a fat top wherein is placed a highly-spirited Amazon group, the work of Professor Fischer.



also of iron. The dark tone of this metal is greatly relieved by an inlaid shield of silver, beautifully wrought into one of the most elegant and simple of the antique configurations. The Table is unique in its design; a series of antique

figures, in bas-relief, form a kind of constellation below its surface, which is supported by four ringed demi-figures springing from the shaft.



This is moulded and ornamented with considerable elegance; indeed, the entire object is one of much artistic beauty in its several parts.

The annexed engravings form portions of a **BRIDGE**, contributed by Mr. FEYET, of London, a metal chaser, who has executed the whole of the ornamental work in electro-plated silver. He calls it the "Prince of Wales's Bridge" having made it with a view to its being adopted by his Royal Highness. The embossments with which it

is decorated, therefore, bear reference to the position of the Prince in connection with a great maritime power. The ornamental outer edge of the walkway, here engraved, is composed of dolphins, sea-horses, and foliage; the inner edge has an anchor, with foliage entwined; the centre of this part, which is not engraved, shows the



heraldic arms of the Prince, his coronet, &c. The railing, which forms the centre-piece in the engraving, have a foliage border surrounding the coronet. The buckles, bowl-stall, face-piece,

loops, &c., are also ornamented. The leather-work is manufactured by Mr. LAMOUR, of London. The design of the harness, altogether and in detail, is by Mr. W. Harry Rogers.

ART-JOURNAL ILLUSTRATED CATALOGUE.

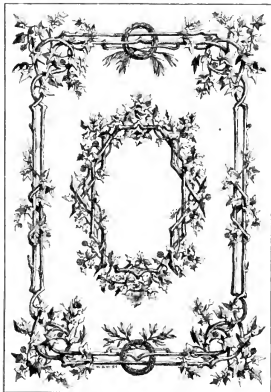
The EMBROIDERED ALTAR-CLOTH is by Mr. T. HARRISON, of London. It is a very elaborate specimen of gold embroidery upon a field of rich crimson velvet. In the centre is the incenseman I H S surrounded by a "gloria" of twelve principal rays and stars. In the spaces are astro-

dated two conventional roses surrounded by stars. A flowing pattern of trefoil and gothic pine-apples forms an elegant border to the cloth, and the whole is edged by a massive fringe of gold four inches in depth. The design for the embroidery is the work of Mr. W. Harry Rogers.



The BOOK COVER, the back of which appears on the opposite column, is exhibited by Messrs.

DOUGLAS & SONS, of London. They are designed by Mr. W. Harry Rogers, and cannot fail of being



admired for the lightness and elegance of the composition, which is entirely of a floriated

character, an arrangement of the ivy, holly, and other evergreens worked into a pattern with much

The BIT for a horse, commencing this column, is contributed by Messrs. ASHFORD, of Birmingham, extensive manufacturers of what is termed "saddlers' ironmongery," such as steel-lets, stirrups, whips, and whip-monsters, but all of a superior quality. The example here introduced is intended for the use of a lady; it is of pierced



steel, highly polished, is exceedingly light in construction, and may be regarded as a novelty.



taste. It is almost as effective in what the trade call "blind-work," as when richly gilt.

THE INDUSTRY OF ALL NATIONS.

A FOWLING-PIECE, contributed by M. BATES, of



Suhl, Saxony, shows some exquisite carved work, emblematical of its uses, on the stock. The gun itself is of peculiar construction in its manufac-

ture, tending to obviate the dangers attending any sudden explosion; we have before us diagrams of its mechanical arrangement, but which we cannot afford space to introduce into our pages.

The CHATELAIN-HEAD is exhibited by Mr. TREUBHILL, of London; it is entirely produced by hand, in hard steel, chiefly by means of minute files. The principal portions are flat,

perforated and engraved, but a slight projection is given to the more important ornaments or emblems introduced. The design which is by Mr. W. Harry Rogers, is in the Italian style, con-



noting of foliage surrounding an oval compartment. This has the monogram V.A., and is surmounted by the royal crown; beneath are the

Prince of Wales' feathers, and a label inscribed 1851. Six medallions contain the crests of the illustrious promoters of the Exhibition.



The SCISSORS are also by Mr. TREUBHILL; the ornamentation is an adaptation of the Italian style.

They are highly to be commended as examples of the taste of the designer, whoever he may be.

IVORY POKAL, by CHRISTIAN FRANK, near Nuremberg. The pokal is of public form, and beautifully carved in relief, illustrative of subjects taken from the old German Nibelungen Lied, after the paintings of Julius Schauer von Carlsfeld. The reliefs are: From the fourth adventure, 'Sigfried with the Saxons'; seven-



teenth adventure, 'Sigfried married and en-

ART-JOURNAL ILLUSTRATED CATALOGUE

Messrs. COOK & ROSA, of Borden, Bedfordshire, manufacturers of earthenware, supply the markets in England and on the Continent with ordinary articles of domestic use, in which they endeavor to combine utility with an amount of ornament, that will not prejudice economy. Our first cut represents a TEAPOT of brown glazed ware, of very cheap construction, but not without its peculiar grace in design. A patented branch of their business



is devoted to the ornamentation of similar articles by inlaying clays of various tints, thus producing an instructible coloring for the learner and other ornaments, such as signs



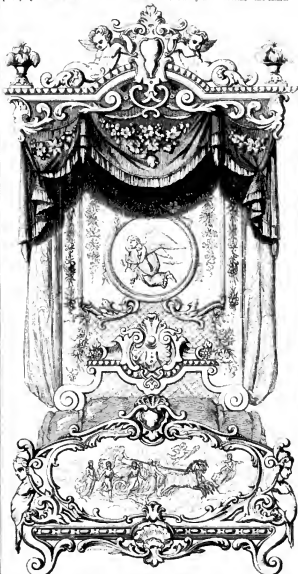
upon our second specimen of their works. The WATER-JUG, which completes our selection of articles from this establishment, is a useful arrangement of form; the water-jug being



introduced in the base of the jug with very good effect. It must be borne in mind that all these articles are constructed only for the cheapest market; and we give them as instances of improvement in such branches of our national industry, as were but a few years ago, as must be acknowledged, most inert in taste.

Messrs. FAYELL & PHILLIPS, of London, exhibit a STATE BEDSTEAD, of needlework, produced principally from British materials worked

entirely by English-women in London; it includes almost every description of ornamental needlework commonly called "Burlap," and embraces



dary. A lengthened description of this costly and beautiful piece of furniture would fill half our page; we must therefore be content with

speaking of it as a work in every way honorable to the taste and enterprise of the manufacturers, who have long been famous in their trade.

THE INDUSTRY OF ALL NATIONS.

The two specimens of CARPETS on this page are from the factory of Messrs. HENDERSON & Co., Durham, whose establishment produces a large

variety of Venetian and damask stair-carpets, as well as of Brussels carpets for all purposes—distinguished by beauty of design, brilliancy of

colour, and firmness of quality; while the prices which we understand they command in the market, testify to the high character they hold



among the "trade." For the last seventeen years this house has worked entirely from drawings expressly designed for them, and thus at an

early period, they materially contributed to give effect to that principle of property in design, the justice of which is now universally admitted.

The establishment of a woollen manufacture in Durham, dates back as far as the commencement of the seventeenth century, with funds



supplied out of a charitable trust connected with the city, but the manufacture languished till 1618, and was then abandoned. In 1760, another

attempt was made, and was equally unfortunate, two successive parties having failed in working it out; but in 1815, Mr. Gilbert Henderson, the

father of the present enterprising proprietors, undertook the task of establishing a manufactory confined to the production of those carpets only.

ART-JOURNAL ILLUSTRATED CATALOGUE

The CHATELAIN, which, with its various details, occupies this page, is the contribution of Mr. DUBOIS, of London; it is an excellent example

of steel manufacture, displaying considerable taste and fancy in the entire composition; while the various articles which form the

a fine effect. The modern chateaine is but a reproduction of an article of decorative ornament, worn by ladies in our own country more



pendant group are designed with much taste, and worked up with considerable skill. The numerous faces



upon the ornamental knobs and ornaments which cover the entire surface of the chateaine, give to it



than a century and a half ago. The watch, the scissors, steel, pincushion, &c., were then occasionally appended to the dresses of the ladies,



quite as much for ornament as for use. The elegant and ornamental character of the object may



again secure its favourable reception; and the beauty of such as that we now engrave must recommend it even to the fastidious stiltian.

THE INDUSTRY OF ALL NATIONS.

THE BEAUTIFUL EMBROIDERED MUGGIE DRESS, of which we survey a part, is one of the many contributions of Messrs. BROWN, BEARDS, & Co., of Paisley. These manufacturers have long been famous, having obtained eminence not only for the excellence of their work, but for the purity and beauty of their designs;—and it is known that they have employed in the production of subjects for their numerous workers, artists whose reputations have not been merely Provincial. Our engraving man of course affords but a limited idea of the skill of the designer: in this, as in

many others of the articles contributed by the firm, he has aimed at copies of natural flowers, and has avoided those conventional forms which for a long period were considered indispensable to workers in needle. The dress to which reference is here made, will be found among the richest and most elaborate productions of the

needle. It will readily be supposed that patterns of this description unavoidably lose much of their true effect, by the necessity that compels us to have them drawn on a greatly reduced scale, to suit the size of our pages. Hence, what seems to possess a redundancy of ornament in the engraving, although delicately and carefully drawn on the wood, takes a far less crowded, and a bolder, form on the manufactured article: this will be understood when we state that the pattern measures, in the original, upwards of three feet in height by four in width.



A LARKS EMBROID, designed by S. MCCLUT, a pupil of the Belfast School of Design, and produced by Mr. McCracken, manufacturer of linen

embroiders, Belfast, presents a pattern of much elegance. The subject is derived from the lark shown in its autumnal or ripe state, when the

berries assume their deep red colour. The arrangement of this composition is exceedingly well managed, and in the manufactured article



it has a rich and brilliant appearance, the foliage being embroidered in gold, with the red berries on a blue ground, the centre shows the hawkhorn

in bloom, coloured after nature on a white ground. To this design was awarded the first prize of three pounds, offered last year by Lord

Dufferin to the Belfast School for the best design for ornamental linen; it is a work marking simplicity of subject with great skill in adaptation.

ART-JOURNAL ILLUSTRATED CATALOGUE

We engrave one of three drawings transmitted to us by PROFESSOR KÄMPF, of Vienna; it exhibits HIER OFFERING SACRIFICE TO THE EAGLE OF JOTA. The Professor, we understand, occupies a high position in Austria; his works are generally of a poetical order; but he has been entrusted with scenes "for the nation" which are in closer proximity to actual life. Happily for the sculptors of the Continent, their governments find them frequent employment; private "commissions" are rare.



From the contributions in PORCELAIN and EARTHENWARE of Mr. CHARLES MEIGH, of Sheffield, Staffordshire Potteries, we select three objects: the



one, a CLOCK CASE, of very elegant and appropriate design, executed in statuary porcelain; the next, a VASE, also in statuary porcelain—copied, we believe, with some alterations, from a French model; and next, one of those EUCHAISTICAL DRINKING CUPS, ornamented with figures after FOUSSIN—which seem to have been invented for the purpose of showing

how much of grace, dignity, and manly vigour may be sacrificed, to render homage to the so-called "jolly god." These examples of his manufacture are highly creditable to Mr. Meigh; they are works of a right good order,



and exhibits marked improvement in one of the most extensive and best conducted of the factories of Staffordshire. It is only of late that



Mr. Meigh has paid attention to the better class of goods; but for many years he has enjoyed high repute as a producer of admirable works in earthenware; and he is among the largest exporters in the kingdom.

THE INDUSTRY OF ALL NATIONS.

In the production of CASES the continental artists have achieved a well-deserved reputation; we engrave three very beautiful works of this class, the productions of M. JURY, of Liège. The first is a copy after Horace Vernet of his "Chasse au Faucou," very delicately and beautifully rendered.



The same artist's well-known picture of "Marsyas" has furnished the second subject; the third is a charming group of "Children and the Sea-Nymphs." The graces of tint in enamel are fortunate aids to the sculptor in producing striking and interesting effects; these advantages were so highly appreciated by the artists, that they volunteered



to imitate them in their glassworks—of which a well-known instance may be cited in the Portland Vase. The works of the ancients in this department of Art were frequently cut upon cups of large dimensions; one of the most celebrated is preserved at Vienna, and represents the epothosis of Augustus. The antiques differ from the modern



enamel, being cut upon tinted stones, and not on shells (conchyliæ); the latter being an imitative art in another material, and the result of a comparatively modern era—the taste for enamel having been re-announced by the famous family of the Medici, and perfected, under their auspices, in Florence.

The TERRA COTTA works of Mrs. MANN are situated at Charlottenburg distant about four miles from Berlin; the lady by whom they are conducted is the widow of the manufacturer who formed the very admirable establishment. Here are produced works of the highest artistic merit, works designed by the best artists of Prussia, who do not "shame" to dedicate genius to the improvement of the humblest articles of



daily use. We select for engraving four of the productions of Mrs. Mann;—the Pokal, or



ART-JOURNAL ILLUSTRATED CATALOGUE

drinking-cup is a copy; the gothic vase is from the design of Professor Struck. But the most beautiful of the objects contributed by Mrs. Marsh is a Fountain, which we also engrave. This work was produced expressly for the Exhibition.



The Vase, filled with artificial flowers of silver, is the production of BRECH and SOU, Jewellers, and Silver and Gold Workers, of Liège. The Vase is an object of much delicate beauty: the flowers are not made in dies, but are the production of the artist's hand, and are accurately modelled from nature.



We saw at the establishment of Messrs. Struck much that was rare and valuable, but in this particular branch they are unrivalled.



The works of M. FALLONE, of Liège, in wrought metals, are of the highest order of merit; the cover of a SNEFF-BOX we print on this page; and works of great ability on subsequent pages.

THE INDUSTRY OF ALL NATIONS.

This page, and the two pages which follow, are devoted to a few of the contributions of M. MATIFAT, of Paris, an extensive manufacturer of bronze articles, both useful and ornamental. In our illustrated notice of the Exposition in Paris of 1845, we engraved a number of the objects contributed by this most ingenious artist, being particularly struck with their beauty of design and very superior style of workmanship. We have reason to

believe that all other nations in bronze casting; still it is only within a few years comparatively that she has made any considerable more in advance of the old routine system of manufacture; while among those who have quitted the

beaten track, and have introduced new ideas and new arrangements of the best models of antiquity, M. MATIFAT may take his stand with the very foremost, throwing into his production a soul, energy, and perseverance which, united



know that in this we conferred a benefit upon more than one of our own manufacturers, to whom our pages introduced M. Matifat, and who have availed themselves of his talent and experience to raise the character of their own productions; for this gentleman, like all men of true genius, is influenced by none of those petty and unworthy feelings which would cause him to "hide his lamp under a bushel," fearing lest others should derive light from it. France has for a long time taken the



with skill and taste, could not fail of success, and to elevate him to a high position in his especial branch of manufacture. Having thus awarded him the praise to which he is justly

entitled for his productions generally, we proceed to remark upon the objects we have engraved from a few of his numerous contributions. The first is a Fountain, of somewhat



small dimensions, suitable for a conservatory; among the ornamental ornaments are birds, a squirrel, and a snake; all of which are adorned with the skill of an artist who desires to

make his design both natural and elegant. The first on this column is a Vase or Tazza, of the style of Louis XIV., cast in iron, its diameter is eight feet, and its height five feet;



the form of this vase is exceedingly elegant, and its representation simple, but of pure taste. Underneath are two smaller engravings, one of a DRAGON FLAMING, and the other a portion of an EMBROIDERED. Next follows a JEWEL CASE, of embossed steel, the joints are of iron, dismounted with gold, the frames are of silver.

Paris, for some years past, has been regarded as the great manufactory for the finest productions in bronze, calling into employ many excellent artists and the most skilful workmen; for it must be borne in mind that the majority of the best works are executed by the hand from the model, as it comes rough from the mould.

ART-JOURNAL ILLUSTRATED CATALOGUE.

To resume, however, our notice of M. MATTEA'S contributions. The present page commences

with a TAZZA and COVER, of chased iron; the flowers in the centre are enamelled, the foot and

Then follows a FLOWER-BASKET, which, being of silver, may be used as a centre-piece for a



the interior are inlaid with gold damasque work, imparting to the object a rich and costly effect.



The next object is a TAZZA, of considerable dimensions, and exquisite in form and workman-



ship. The body is surrounded with a wreath of oak, foliage, and flowers; and other animals are twisted into the forms of handles: the base and pedestal are decorated in a similar manner.



dessert service: the numerous figures in this



design are judiciously distributed throughout

THE INDUSTRY OF ALL NATIONS.

the composition. An ITALIAN ARCHITECTURAL ORNAMENT, executed in bronze, concludes the



page: it is distinguished by great beauty of proportion and elaborate chiselling. A GAS PILLAR.



of chaste design, is introduced above, to which succeeds a small VASE, modelled after the Etrus-

can relief, exhibiting on the side we have engraved a contest between a man and a centaur.



We come next to a VASE, the style of which the artist terms Austrian; it stands two feet and a half in height, and is beautifully modelled with

ornaments. The next is a SWISS of very elegant form, and highly enclosed in the manner of the



antique. The last engraving exhibits a CHANDELIER of simple but pure character, in which the relative proportions of the different parts are



evidence that the design has originated from an artist well instructed in those

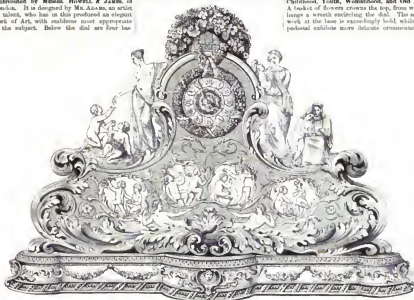
principles on which are based the beauty and harmony of curved lines.

ART-JOURNAL ILLUSTRATED CATALOGUE.

A drawing-room CLOCK, made of ormolu, is contributed by MESSRS. HOWELL & JAMES, of London. It is designed by MR. ADAMS, an artist of talent, who has in this produced an elegant work of Art, with emblematic most appropriate to the subject. Below the dial are four low

reliefs of children, representing the "Seasons,"

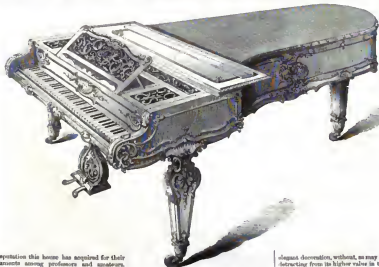
and on each side are female groups symbolizing "Childhood, Youth, Womanhood, and Old Age. A basket of flowers crowns the top, from which issues a wreath encircling the dial. The scroll work at the base is exceedingly bold, while the pedestal exhibits more delicate ornamentation.



We next introduce an engraving from a splendid horizontal grand PIANO-FORTE, one of the speci-

mens which we have selected from the contributions of MESSRS. COLLARD & COLLARD, of London.

The case and the inner stand are richly carved, and the instrument altogether accords well with



the reputation this house has acquired for their instruments among professors and amateurs. Where expense is not an object to the purchaser, we see no reason why the piano-forte should not more frequently exhibit the skill of the carver in

wood than we are accustomed to see in it: there is always abundant space for the display of such

ellegant decoration, without, as may be perceived, detracting from its higher value in the estimation of the performer; and being, generally, as appertains to the drawing-room, ornamental, as well as utility in its construction, merits consideration.

THE INDUSTRY OF ALL NATIONS.

From the contributions of Messrs. HARRIS & BROTHERS of Birmingham, we select three—two

We introduce on this page another engraving of one of the PIANOS of Messrs. COLLARD &

COLLARD, of London. It is richly decorated and forms a most elegant work of art manufacture.



FRUIT-PULLA, and a VASE of bronze. These gentlemen are eminent manufacturers of the several



objects for which the great factory of hardware has been long famous. Their manufactory of



"household" metal furniture is very extensive



The engraving underneath is from one of the Delft. It is of a good order of Art, and will certainly contribute by JAS. HARRIS & BROTHERS, of 40 credit to the long established and justly



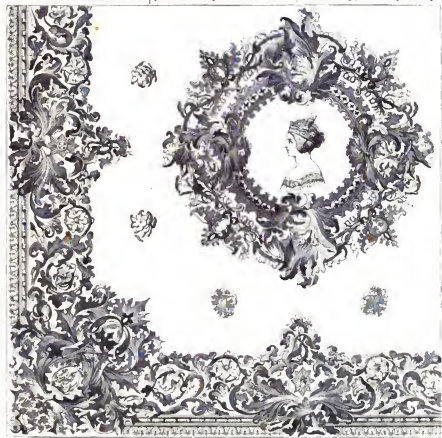
celebrated manufacturers, who presides over a very extensive factory of the best Dutch carpets.

ART-JOURNAL ILLUSTRATED CATALOGUE

Among the fine DIAPERS and damask laces received from Douvreville, are some singularly rich and beautiful TAPIS-CLOTHS, manufactured

by Mr. BIRKELL, from designs furnished by Mr. Paton—an artist who has for upwards of a quarter of a century aided the manufacturers

of that famous and venerable town. We have engraver one of them on this page—bold and elaborate in design, and in all respects worthy of



covering a royal table. In the corners of the border we discern the "St. George," and in the centre

of the same part, the badge of the Order, the Thistle, and St. Patrick. In the centre of the cloth

is a medallion bust of Her Gracious Majesty. This table-cloth is made from the finest Flemish flax.



We introduce here four copies of the backs of WATCHES,—the watches contributed by Messrs. ROTHERHAM & SONS, of Coventry. They exhibit

marked improvement of style, and do great credit to the extensive establishment from which they emanate. The designs are good, and the work

manship is excellent. They are enamelled, and tastefully set with jewels, so disposed as to give much beauty and agreeable effect to the faces.

ART-JOURNAL ILLUSTRATED CATALOGUE.

Few knowing the vast resources and the long experience of the eminent firm of Messrs. HUNT & ROSSALL, of London, who now conduct the business formerly carried on by Messrs. Storr & Me-

surita of foreign and English silver-work, it has been stated that the inferiority of the latter has been in a great measure attributable to the absence of good designs, and to the superior taste and delicacy of finish in the foreign workmen. Hence



tiner, will be surprised to find them making a display in the Exhibition commensurate with the reputation of an establishment that produces many of the most costly manufactured articles in the precious metals. Without disparagement to any other house in London, in a similar branch of business, it may be said that Messrs. Hunt & Rossall have no rival in the extent of their transactions, and a visit to their show-rooms is like inspecting a museum of Art. We, therefore, feel that we do not pay an unwarranted compliment to those manufacturers in gold and silver works of



every kind and description, by devoting two or three pages of our Catalogue to a notice of their contributions. In the remarks we have occasionally made in the Art-Journal upon the comparative



political events abroad have, however, brought over a number of the latter to this country, and there cannot be a doubt that we have greatly benefited by this fusion of inventive aid with English energy, perseverance, and capital. Moreover, manufacturers have found it essential to their interests to seek the assistance of other hands than those of the mere artisan, however skilled as a workman, to invent, and suggest, and improve. Hence from these two causes a decided change



for the better has, within the past few years, been perceptible in every branch of this department of Industrial Art; and we may add, without egotism, that the pages of the Art-Journal have had some influence in effecting this amelioration.

THE INDUSTRY OF ALL NATIONS.



by means we need not now enlarge upon. With



these few brief introductory observations we



proceed to the notice of the various subjects selected from Meuse, Hunt & Kockell's contributions. The first page commences with two bronze STATUES; the former represents a Hindu girl plucking the sacred lotus plant (artemisa indica), and the latter depositing her lamp in the waters of the Ganges. The originals of these statues are, we believe, executed in silver, and formed a part of the Eilenborough

testimonial. The group that succeeds form the GRAND GOODWILL PLATE, for the year 1844; it represents William of Nassau at the Battle of Nieuport. This is followed by the TARTANCOAT, presented to Mr. B. Lonsley, owner of the Theatre; it is designed and modelled by Mr. A. Brown; the figures, appropriately introduced, are those of the sister nations who made over dramatic and musical festivals. The column on



the second page commences with a DIBBY STRAIN, showing a Hindu deity seated under a banyan tree; the succeeding objects are two ICE-PALA, formed by the lotus, supported by

other Indian plants; these three objects are from a series presented to the Earl of Eilenborough. The large engraving on the same page is a massive and costly CANDELABRUM in

ART-JOURNAL ILLUSTRATED CATALOGUE

silver, a testimonial presented to the Marquis of Tweeddale. The subject of the group is taken



from Buchanan's "History of Scotland," and illustrates the historical fact connected with the rise of this noble family, a countryman, named Hay—the family name—is, with his two sons,



leading the Scots to the defeat of the Danes, A.D. 900. The composition, which evinces remarkable spirit, is also designed and modelled by Mr. A. Brown. At the head of the third



sea, and the Destruction of Pharaoh's host; Lawless Violence in the world, typified by wolves

page is an elegant Carr, followed by a strength Caesar, in the style of the cinque-cento period, set with antique gaze; and below this is a Carr to correspond. A group in silver, of Montpelier,



to Sir Moses Montefiore. It is scarcely necessary to remind our readers that Sir Moses is of the Hebrew persuasion, and that the design, which is by Sir J. Hayter, has reference to certain events connected with the past and present history of the Jews. Thus, the sphinxes indicate the captivity of Israel in Egypt; the figures are Moses,

comes next; great spirit is imparted to this work by the animals being "relieved" from the ground, the horse, especially, appears as if flying. The last engraving is from a Testimonial presented

from the great deliverer of the people, a Jew of Damascus, loaded with chains, and one released; under them are appropriate texts in Hebrew, with the vine and the figure overshadowing. The group on the summit represents David rescuing the lamb from the jaws of the lion, and the bas-relief shows the Passage of the Red



devouring the flocks; the Millennium as spoken of by Isaiah; Sir Moses and Lady Montefiore

landing at Alexandria; Sir Moses obtaining the Extran from the Sultan; and two other subjects.

THE INDUSTRY OF ALL NATIONS

The SILVER CUP, engraved below, is designed, modelled, and embossed by the exhibitor, Mr. SHARP, of London; he terms it the "Justice Cup." It exhibits round the body in bas-relief, Justice protecting the innocent, and driving from the earth Violence, Fraud, and Discord.

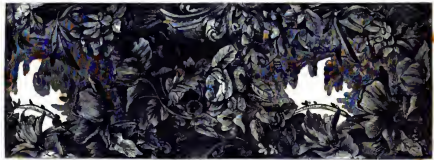


The CARPET pattern engraved below is from the manufactory of Messrs. PARSON & Co., of

A FAIRY, carved in wood, and *cartes-pierre* execution of the work. The centre is filled with a design modified from Albert Durer's "St. Hubert," and the lower composition shows a group of children engaged in agricultural operations.



Kidderminster, one of the largest establishments | goods, from the costly velvet to the commonest in that town; it produces an infinite variety of | kinds, but all of more than ordinary excellence.



ART-JOURNAL ILLUSTRATED CATALOGUE

Mr. BISHFIELD, of London, the extensive manufacturer of ornaments in PAPER-MACHE, exhibits a large variety of his manufactures, from which we have selected five specimens for engraving, namely, two cornices, one bracket, a



cornice-piece, and a cornice or moulding, all of them designed with true artistic taste, and executed with very considerable sharpness and delicacy. Mr. Bishfield manufactures almost



exclusively for the trade, or, in other words, supplies architects, builders, and decorators with the ornaments required for the edifices they may be erecting; and, in the present day, these paper-maché manufactures have, in a great measure,

superseded the use of plaster ornaments, and are not unfrequently used instead of the more costly

materials of stone and wood. Its hardness, durability, and ready assumption of all forms and



designs; the facility with which it may be put together and fixed up; its lightness, and, lastly, its cheapness, are all qualities highly desirable in a manufacture of the kind, and which recommend



it above every other employed in interior decoration. We have, on more than one occasion, visited and reported Mr. Bishfield's most interesting establishment, and have had opportunities of inspecting the very extensive variety of ornamental productions constantly issuing from it.



THE INDUSTRY OF ALL NATIONS.

Perhaps there are few branches of British Industrial Art in which greater advance has been made during the past few years than our



glass manufacturers exhibit: in quality of material, in form, and in design, the works of the present day manifest a decided superiority over

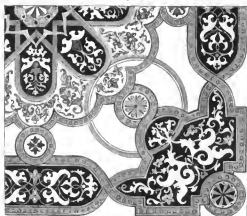


those of a quarter of a century ago. The three GLASSES on this column, manufactured by Mr. CURRIE, of London, are in themselves sufficient



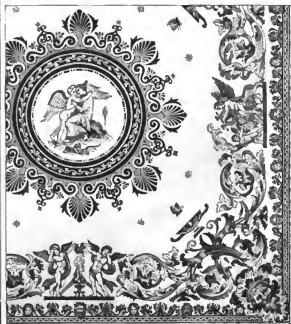
evidence of this progress: the ornamental design in the first and second examples is characterized by delicacy, and in the third by boldness, while the form of each respectively is in good taste.

From upwards of one hundred specimens of DAMASK TABLE LINES and COLOURED TABLE CLOTHS, manufactured by Mr. REVERIDICK, of Dundermilne, we have selected six for introduction on this and the two following pages. Mr. Beveridge's manufactory is among the first, if not the most extensive, in the town and its neighbourhood, employing about fifteen hundred



pair of hands out of some five or six thousand engaged in this branch of trade. The varieties

of fabric woven in Dundermilne may be stated to consist of damask table-linen, table-covers,



linen floor-cloths, and dozens of all descriptions: more than one half of the goods so manufactured, and those chiefly of the finer sorts, are disposed

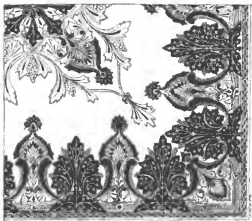
of in the home market, the remainder being exported, principally to the United States. Table linen has greatly benefited by the introduction

ART-JOURNAL ILLUSTRATED CATALOGUE

of the Jacquard loom, which is used for every description of cloth from that made expressly for her Majesty's table, to the coarsest "whitey-lavens," destined to cover the pine-board of some American backwoodsman. Some idea may be

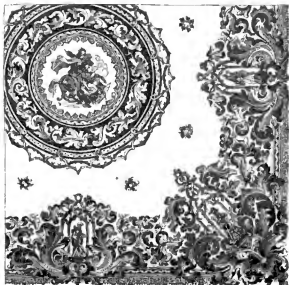
formed of the present advanced state of the manufacture, when it is known that for the design of a table-cloth and napkin, such as some of those represented on our pages, so much as one hundred pounds are frequently paid. Our

A CUTTAR and SCABARD, by Messrs. WILKINSON and BIRCH, of London, is a most elegant specimen of manufacturing art. It is of silver, chased and gilt, and is ornamented with one hundred and four precious stones, consisting of emeralds,



first engraving is from a TABLE-CLOTH of damask, woven in an arabesque pattern, of great boldness. The second is also a damask TABLE-CLOTH, with napkins to correspond; they are of classic design,

the centre exhibiting figures of Cupid and Psyche. This page commences with a TABLE-COVER of arabesque pattern, in various colours; it is made of silk, cotton, and wool. This is followed by a



lines damask TABLE-CLOTH, with napkins to correspond; the border is Gothic, having the figures of St. George, St. Andrew, and St. Patrick in the corner pieces, with St. George and the

Dragon in the centre. This pattern is singularly beautiful. The articles confer honour upon the manufacturer. They are, we understand, principally designed by Mr. Paton, of Dundee.



rubies, turquoises, jacinths, carbuncles, &c., &c., inserted in arabesque patterns. The blade is of the finest temper; it combines sublimity with engraving, bluing, and gilding, so as to form two elevations of an highly ornamental pattern.

THE INDUSTRY OF ALL NATIONS.

We resume on this page the contributions of Mr. BEVERIDGE, of Dundee. The first engraving is from a linen damask TABLE-COVER, having napkins and doyleys to correspond. The pattern introduced is borrowed from the vine. The next is a TABLE-COVER, in what the manufacturer terms the French style; it is woven in a variety of rich colours, in wool, silk, and cotton. It seems almost unnecessary to add that the circumcised space to which we are compelled to limit our engravings, detracts somewhat from the boldness of the designs. There is a curious history attached to the introduction of this art into Dundee—from Drumsburgh, near



Edinburgh, where it was secretly practiced at the beginning of the last century. A man, named Blake, feigning to be of weak intellect, found his way into a weaving-shop, and was permitted to amuse himself underneath a loom, where he carefully observed the manner in which the cords and other parts were arranged, and, by the aid of a good memory, and some previous knowledge of the general mechanism of the loom, he brought away the great secret, and was not long in reducing it to practice. In no branch of Art-Manufacture do we perceive such unrequited signs of advancement as in the damasks produced of late years in Scotland and in Ireland; of this our



Catalogue supplies sufficient proof, those of Belfast, engraved in subsequent pages, are honourable to Ireland; the great manufacturing capital of the island is, in all respects, worthily represented; while the ancient renown of "gray Dundee" is more than sustained by the productions of its looms, which find their way, common or refined, to every country, and almost every district, of the civilized world. In such articles as those under notice, we can have no dread of foreign competition; neither in the material, its fabrication, nor even in the decoration to which they have been subjected, shall we be surpassed by the manufacturers of Germany, Belgium, or France.

On this column are engravings from two exquisitely beautiful Caskets, manufactured by Mr. WERTHEIMER, of London. The engraving work on these objects is of the most elaborate and delicate description; they are adorned with malachite and precious stones, and are, in every way, worthy of finding



a home in the most sumptuous boudoir. The lower one is placed on a superbly gilt stand, the base of which has also malachite inserted. While so many exquisite work-worthy rivals to the best of those which "the great era" produced in Germany and France—are contributed from



the Continent, it is with exceeding pleasure we direct attention to those which have been created in England; Mr. Wertheimer is, we understand, a German, but one who is to be regarded as a British subject. We believe the coming of such men among us to be the surest way to benefit ourselves.

ART-JOURNAL ILLUSTRATED CATALOGUE

The **Russon** patterns occupying this column are from the manufactory of Mr. C. Russon, of Coventry. The



former of the two designs has a quaint yet elegant



border, and the entire shows two light and graceful patterns. The latter contains a greater variety of beautiful subject, disposed in a highly effective manner.

The manufacture of **PARIS-MIRAK** into a great variety of useful articles of large size is the result of the efforts made, within a con-



It is not many years since the limits of the trade were circumscribed to a tea-tray, but now we find articles of furniture, not only of

puratively recent period, by the various artisans who have devoted their attention to this important branch of the industrial arts.

a slight and ornamental character, such as ladies' work-tables or boxes, but of a more substantial kind, in chairs and sofas for the draw-



ing room, or the entire casings of pianofortes. All such examples of the variety and comprehensive nature of **papier-mâché** works are ex-

hibited by Messrs. JEFFERSON & HERRING, of London and Birmingham, and our pages testify to their beauty. These manufacturers

THE INDUSTRY OF ALL NATIONS

have earned a reputation by their unswerving endeavours to improve the character of such productions,—a reputation which is certainly well deserved, and which will be increased by their contributions to the Great Exhibition. We commence our series of illustrations with an **INSTRUMENT**, designed by H. M. Kirby, a sculptor of great ability, the material being in oxidized silver; the entire surface of the instrument is black, and the base upon which the stage stands is ingeniously designed for an envelope-box. We follow with the most novel and beautiful of the series of these manufacturers' works. The **VICTORIA TANA** "Cot," designed by Mr. J. Bell, the eminent sculptor. The body of the cot is scallop-shaped; it is of a dark tint, upon which is richly embellished the rose, nightshade, and poppy. The flowers of the Victoria regia decorate the base,

lifted for use as required. The **ELIZABETHAN CHAIR** is a favourable specimen of the success

fully carries out his conceptions in any material, however discouraging it may appear in the outset. The peculiar character of decoration embraced by this style has been effectively preserved, but it has been rendered very light and elegant by the perforated work, and the colouring and gilding, which adorn it. It is remarkably firm and strong, but the ornamentation prevents it from appearing heavy. Of a totally different character is our second **CHAIR**, in which lightness and gracefulness of contour have been entirely considered, and are well carried out. It is termed the "**Legier Chair**," and has been provisionally registered by its maker, who soon



which may attend the manufacturer who fear-

to be aware of its claim to popularity. Our

and gracefully curl over the cot as supports for the curtain. The entire fittings are conspicuous in character, but in the best possible taste. Our next example exhibits a very novel and graceful adjunct to the boudoir, in the **LOTUS TANA**, also designed by Mr. J. Bell; it is, perhaps, one of the most original conceptions contributed by the manufacturers whose works we are describing. The florid decoration which covers its surface is eastern in character, possessing all its elaboration of form, and all its vivid beauty of colour, its effect of the whole being gorgeous in the extreme, but not by any means offensively gaudy, a qualification that is not always duly considered, though it always should be, in works of this class. An improvement is effected by constructing the shaft of the table in the style of a telescope, and allowing each part to be



second group comprises a **Vase**, originally designed for the late Princess Sophia, it is richly

inlaid with mother-of-pearl and gilding on a pink ground. The bellies **WAX TANA** is decorated

ART-JOURNAL ILLUSTRATED CATALOGUE.

in the same taste, and is of very novel form. The **PURSEMAN FLOWER-STRAND** is a graceful and elegant ornament to the drawing-room. The **WAITING-DISK** seen in the foreground is inlaid with imitation gems by the patented process, employed exclusively by this establishment with the happiest effect. The small **CROCKERY-BOX**

beside it is ornamented with a classic bas-relief, electro-silvered by Elkington, the subject being the story of Niobe. Our last engraving shows a group of **TRAYS**, the old staple branch of the trade, which are designed with freedom and decorated with good taste; we give an example of the simplest as well as the most fanciful,

that we may fairly represent these works. The centre one was made for the Duchess of Sutherland; its shape was expressly designed to admit the tea-urn never to the dispensers of "the cup which cheers but not inebriates;" the tray to the left is richly inlaid with patent pearl ornaments; the design of the other is plainer.



Mr. G. W. Adams, of London, exhibits numerous objects of silver, and silver-gilt plate, of

more than ordinary excellence in design. We have selected from his contributions, of which, by

the way, he is also the manufacturer, a **DINNETT** Fork and Spoon, and two **DINNETT** Soup



LADLES. The pattern of the former are remarkable for their simple elegance; there is little

ornamentation in them, but what there is, shows the best taste. The latter are richer and more

elaborate in their design, in which the vine and hop plants, with their respective foliage, are



brought in most effectively. The works of our silversmiths undoubtedly exhibit great progress

during the last few years; they have certainly kept pace with the increasing taste of the age

and the demand for the beautiful, in all matters connected with the chief manufacturing arts.

THE INDUSTRY OF ALL NATIONS.

Liege, for many years famous for its manufactory of firearms, shows well in the great Exhibition. We engrave here a most elegantly

ornamented Pistol, made by M. Max. Bax, of that city; it is certainly as fine a specimen of elaborate engraved work

as we remember to have seen so applied. The design of the decoration is in the Renaissance style, and is displayed with considerable taste.



M. GAZEN, of Louvain, who has been extensively employed by the Belgian government in decorating the town-hall of that city with statuary, and the stalle

of the Cathedral of Antwerp with groups of wood-carving, contributes a group of angels carrying the slaughtered innocents of Herod's massacre heavenward, and enforcing an un-

The three WATCHES, the backs of which we engrave on this column, are manufactured by Mr. W. H. JACKSON, of Clerkenwell; they are



elegantly designed and elaborately engraved.



The internal construction of these watches shows,



we understand, several important improvements



fortunate mother. It is executed in light wood, and expresses a novel and poetic idea embodied in the taste of the medieval artists who flourished in the Low Countries in the fifteenth and six-

teenth centuries: indeed, the eminent sculptor has been singularly happy in catching the style and spirit exhibited in works of that period, but in a great degree relying upon the school.

ART-JOURNAL ILLUSTRATED CATALOGUE

Mr. ULLMAN, of London, for many years well known as an extensive manufacturer of lace, contributes a white LACE SCARF, in imitation of Brussels point, ornamented with British plants

and flowers in needlework. The date, 1851, is encircled by the rose, thistle, and shamrock. The straight lines of the border are embroidered in gold, and worked upon a fine clear net, for

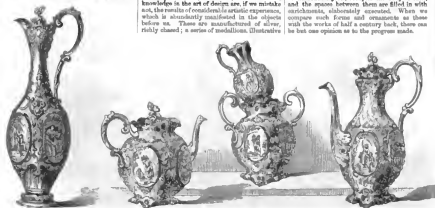
which Mr. Ullman long ago obtained a patent. The design for this scarf was, we believe, made expressly for the manufacturer by Miss Glean, a clever pupil of the Government School of Design.



The CLARET-JUG and TEA-SERVICE are contri-

buted by Mr. DOON, of London, whose taste and knowledge in the art of design are, if we mistake not, the results of considerable artistic experience, which is abundantly manifested in the objects before us. These are manufactured of silver, richly chased; a series of medallions, illustrative

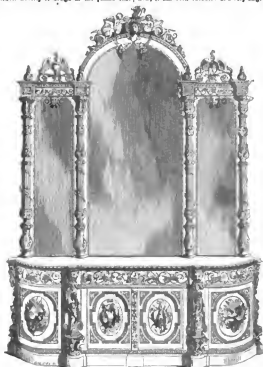
of different subjects, occupy the body of each, and the spaces between them are filled in with arabesques, elaborately executed. When we compare such forms and ornaments as these with the works of half a century back, there can be but one opinion as to the progress made.



THE INDUSTRY OF ALL NATIONS.

Some rich and elaborate carving will be seen in the Steward, manufactured by Messrs. Tuckers & Sons, of London. There is considerable novelty of design in the pillars that

form the frame-work of the glass, while the whole of the carving shows great elegance of design united with exceeding delicacy in the manipulation; it has been executed at a very large out.



From numerous specimens of engraved and cut glass, contributed by Mr. W. NAYLON, of

London, we have selected several and formed them into a group, which will exhibit their



various forms and ornaments to great advantage.

The patterns are cut with extreme minuteness.

This column is devoted to a series of Vases, executed in white terra-cotta, by Messrs. Doul-



ton & Watts, of Lambeth, whose attention has only recently been directed to objects of an



artistic character; those we have engraved may be regarded as a prelude to further success,



which increased experience must insure. The use of terra-cotta, or of artificial stone, as applied



to objects of art and of decoration, is by no means new in this country, although such appli-



cation has been of late very limited. Half a century since, it was carried on to a great extent by Messrs. Coule, of Lambeth.

ART-JOURNAL ILLUSTRATED CATALOGUE

The **SERPENTINE MARBLE WORKS**, established at Farnham, in Surrey, contribute many examples of this beautiful material. We select a few specimens more illustrative of form than of colour,



the latter being the most striking recommendation these works possess. The slender Vase at the head of our page, the **Four** in the centre,

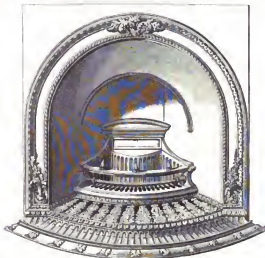


and the **Vase** at the base, are all beautiful, and are considerably enhanced by the variegated colours which pervade the marble. The **quadruple**



pleasures of our own land are, in very many instances, well displayed throughout the British departments of the Exhibition, and strongly testify to their value and beauty.

Two of the richly decorated and admirably constructed **Fire-grates** of Messrs. HOOKE & BUNNET of Sheffield, are introduced on this page; other of their productions will appear elsewhere.



productions, and their contributions cannot fail to attract very general attention. They were among the first to introduce that happy mingling of brass and iron, which, under judicious management, is so effective in giving

These gentlemen are foremost among the best manufacturers of the kingdom; their establishments have been long celebrated, not only for its large extent but for the admirable skill of its

grace and elegance to the fire-side; and they have taken especial care to obtain all the advantages which can be derived from the proper application of art to their purposes, employing thoroughly educated artists in the superintend-

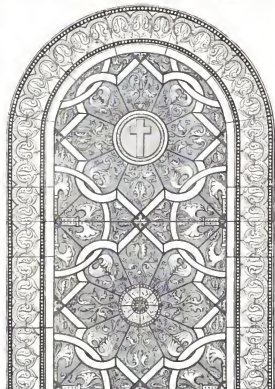


ence of their works. In this class of manufacture England stands pre-eminent; regard being had, however, to the fact that the English fire-

grate is comparatively unknown upon the continent, and that consequently some of its fabricators have attempted to enter into competition with us

THE INDUSTRY OF ALL NATIONS

The art of glass-painting is carried on in England principally at Birmingham and at New-



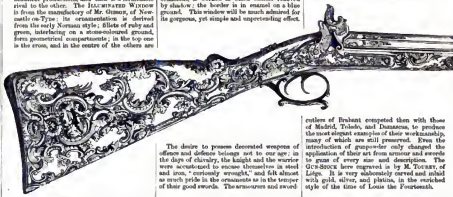
castle-upon-Tyne: each of these towns boasts of possessing extensive establishments for these beautiful productions, and each is a formidable rival to the other. The **IMMACULATED WINDOW** is from the manufactory of Mr. Gimson, of Newcastle-upon-Tyne: its ornamentation is derived from the early Norman style; fillets of ruby and green, intersecting on a stone-coloured ground, form geometrical compartments; in the top rose is the cross, and in the centre of the others are

bosses composed of rich colours: the whole design resulting in tracery filled with elaborate ornament, is worked in black outline relieved by shadow: the border is in enamel on a blue ground. This window will be much admired for its gorgeous, yet simple and unpretending effect.

A group of the **VIRGIN and CHILD**, by M. YANSEN HAECK, a Belgian sculptor settled in London, will remind those who have studied ecclesiastical sculptures of some of these classical



and well-modelled compositions. It is very symmetrical in its proportions, and the drapery is arranged in an easy flowing style, that gives grace and firmness to the principal figure.



The desire to possess decorated weapons of offence and defence belongs not to our age: in the days of chivalry, the knight and the warrior were accustomed to enrich themselves in steel and iron, "curiously wrought," and felt almost as much pride in the ornaments as in the temper of their good swords. The armours and sword-

cutlers of Brabant competed then with those of Madrid, Toledo, and Damascus, to produce the most elegant examples of their workmanship, many of which are still preserved. Even the introduction of gunpowder only changed the application of their art from armour and swords to guns of every size and description. The cross-bow here engraved is by M. THOMAS, of Liege. It is very absolutely curved and inlaid with gold, silver, and platinum, in the enriched style of the time of Louis the Fourteenth.

ART-JOURNAL ILLUSTRATED CATALOGUE.

A very beautiful example of wood carving is exhibited in a *BALUSTE* by M. KNIGHT, of Paris. Its character is well adapted to the style usually followed in ecclesiastical structures, being an arrangement of the vine in Gothic forms, the centre shows the "Virgin and Child," the former treading on the serpent.



A *FACIES* sculptured in wood, by M. LEBLANC, of Paris, represents a boar hunt in the olden time; the



boldly yet delicately carved in alto-relievo. Leonard is, we believe, a young artist who has fired very considerable reputation in Paris

The group—the *Fortune-Tellers*—is contributed by Professor WICKMANN, of Berlin, a sculptor of eminent rank in Germany. He is an artist who especially studies grace; his works exhibit exceeding refinement, yet in combination with rigid adherence to truth. This work he has executed in marble; it was designed expressly for the Exhibition. The intention of the sculptor is to tell the story of a young girl "spying" the fortune of another.



The work is happily conceived, and wrought with the highest finish. During our visit to Germany in 1850, in the atelier of M. Wickmann, we had the pleasure to examine many other fine examples of the admirable artist's genius, and it will be our privilege to engrave some of them hereafter for the *Art-Journal*. With that view we have received copies from the sculptor, whom we shall hope thus to make better known than he is in England.

party have just come on the side of the wild animal, and are preparing to attack him. The design is very spirited, the figures are grouped with much pictorial effect, and the work

as a designer, and, judging from the specimens he has sent to the Exhibition, of his own handy-work, he can execute with as much skill as he in-

vents. We understand that not a few of the leading Porcelain manufacturers of ornamental articles are indebted to him for some of their best designs.

The great improvements made of late in all the appointments of "an Englishman's fire-side," are visible to the least observant. Stores of all kinds and forms, *features* of the most beautiful designs, and enrichments of the most classical description, have been freely used in their decoration. We here present a specimen of good taste in *Vase-Jacks*, the originals of our group



being the work of Messrs. H. & W. TUNNICLIFFE, of Sheffield, who have adopted a style of decoration which gives a sufficient amount of ornament, without detracting from the rigid utilitarian principle, so necessary in producing works of this class, and which ought ever to be borne strictly in remembrance by the designer.

We present two groups of the works of Messrs. BROADBENT & ATKIN, manufacturers of silver and plated goods, of Sheffield; they introduce some very good examples of Decorative Art applied to objects of ordinary use, or to those which form the ornamental adjuncts to the



number of designs will appear, that have been executed both in clay and metal, to give variety to the breakfast service, and most of them prove

dinner-table. The tea and coffee-pots, with the cream-jug and sugar-bowl *en suite*, exhibit a happy rendering of forms with which we are in some degree familiar, but with ornaments presenting the charm of novelty. In the series of illustrations which occupy our Catalogue, a large

on anxiety to leave a better track. Our larger group contains flower-stands, a cake-basket, a cream-jug, and a bottle-stand, all of good design.



We fill this page with a *FESTON*, to which the manufacturers have given the name of the "snake border," made by Messrs. JONES & Co., Sheffield,

for Mr. W. K. Burton, of London. Other works of Messrs. J. & Co., for which we could not arrange in this division, will appear in subsequent pages.



ART-JOURNAL ILLUSTRATED CATALOGUE

wholesome novelty about these designs, which tends to strengthen the well-grounded belief that the manufacturer in bronzes is about to leave the beaten track, and to study for himself.



and give the result to the world in a free untrammelled spirit. The demand for novelty in such articles as these is incessant, and we are sure that the workman who can best supply that



demand in a really original as well as tasteful manner, will surely meet his reward. The continental manufacturer has hitherto had the largest share of merit awarded to him for design, but for



execution and sterling goodness of material we believe our own workmen to be as surmounted in this as in other branches of Industrial Art. There cannot, however, be a doubt that he may still learn the other qualifications from his continental neighbour, which, when he has achieved, may make him regardless of dangerous rivalry.

This Cup, by M. FALLOUX, of Lige, is of iron; the ornament



upon it is of the most delicate and fanciful kind, and is produced by

cutting the surface away into the various forms required, and inlaying it with gold and silver;



the variety of tints obtained by this means is very pleasing; the BAZEL is also similarly enriched.

THE INDUSTRY OF ALL NATIONS.

The china works of Messrs. CHAMBERLAIN, of Worcester, will uphold the reputation of the long-established "Royal Porcelain Works,"—an industrial foundation which belongs to the his-



tory of English ceramic manufacturers, and which has furnished for more than a century in "the faithful city" of its location. It would be difficult, in the present day, for new manufacturers



to obtain the same amount of credit which attached itself to some of "the old houses" in bygone times; a fact which may be accounted for in the quality of the competition everywhere



around them. Achieving a celebrity so long since, the Messrs. Chamberlain have retained it in the specimens they now contribute to our Industrial Congress in Hyde Park, inasmuch as

they are elegant in form, and beautiful in decoration. Our style will give faithful ideas of their contents, although they can but hint at the



at the head of our page are of antique simplicity, appropriately decorated with scriptural scenes, their general surface being entirely covered with

colours which enrich them. The Vases are generally of good form, and present much variety. The COMBINATION CUPS and WINE-FLAGONS

an open honeycomb pattern, giving them great delicacy and richness. The same style of enrichment has been adopted in the articles form-



ing another of our groups, the SWEET-BOTTLE is, in an exceedingly graceful and elegant adjunct to the beverage. The honeycomb pattern is, we

believe, peculiar to this establishment; we are not aware that examples of its peculiar character have been produced elsewhere. The observer



will not fail to note the excellence of the painting in many of the articles contributed by this firm.

They have, indeed, always aimed at superiority in this department. Altogether, we can award



the prize of substantial excellence to the productions of Messrs. Chamberlain, and are glad to

see our older fabricants still vigorous in the field, and still upholding the honour of our native trade.

ART-JOURNAL ILLUSTRATED CATALOGUE

Mr. WOODHUFF, of Bokerell in Dorsetshire, contributes these TABLES constructed of the

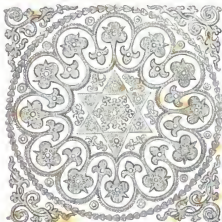


square of the county, in Mosaic. We engrave a Vase of black marble, and the border of a Cushion



TABLE, both remarkable for simplicity and taste.

We engrave underneath the centre of a COUNTERPANE, which exhibits considerable improvement over the ordinary style adopted with so



of bed-covers, called counterpane (from counter-point) is not now made extensively, except of a very low quality: it is of the most durable kind, but has been supplanted by quilts, on which the pattern is produced by the Jacquard loom. The knots or loops which form the pattern engraved

manifest an effect in articles of the kind. It is the work of a hand both swift, and accurate. The peculiar description

are pulled up by the hand with a small steel instrument, similar to a shoemaker's awl. This operation has been performed on this counterpane no fewer than 344,500 times. The article is creditable to the industry of an ingenious workman; and so much we have engraved it.



A TABLE-TOP executed in glass mosaic by Mr. H. STEVENS, of Finsbury, is an example of the artist's ingenuity in adapting his materials to the composition of a good design, and of his patient industry in perfecting his work. Mr. Stevens exhibits several objects of a similar character, heraldic designs, pedestals, &c. all of

which have a brilliant effect in the variously coloured glass of which they are made. This glass mosaic is coming into fashion for ornamenting fire-places in drawing-rooms, and for decorative objects in large halls, for which it seems to be adapted, and where the colour is intermixed with judgment, the work is very beautiful.

THE INDUSTRY OF ALL NATIONS.

The two pages which follow, contain the contributions in **FOUNTAINS** and **EXHIBITS** of Mr. JOHN RIDGWAY, of Goulston Place, Sheffieldshire Pottery. They exhibit examples of the useful rather than the ornamental, Mr. Ridgway's attention having been more especially

and discharge pipes attached, and to be screwed down to the floor." But it will be perceived that although the usefulness of these articles has been the primary consideration, their elegance has also been properly cared for, and they are really graceful additions to the dressing-room, free of the trouble attendant on the use of the ordinary ewer and basin. Another novelty

they generally are, at prices which confine them exclusively to the rich. We have always fully appreciated the value of domestic Art, and, sometimes, had to deplore the want of a judicious acquaintance therewith in our manufacturing; yet, while we are willing to bestow



directed to improvements in the forms and decoration of objects which are the wants of every day. The establishment of Mr. Ridgway is one of the largest, and among the best conducted, of the many factories of Sheffieldshire; and there is no manufacturer who has obtained higher reputation for the excellence of the materials employed. The works exhibited by him will demand consideration on this ground. We first engrave two of several "Fountain Hand-basins"—objects which Mr. Ridgway devised in order to meet a suggestion of the Board of Health, for a frequent and easy supply of pure water, and facilities for the rapid disposal of water that has been used. "These vessels may

appear on our page, a **STAIR-BAIL**, also made in earthenware, and susceptible of much that is ornamental in painting and gilding; there is a lightness and an elegance in this object, not without a peculiar value, when used appropriately, for lavatories, &c. The large group delineates a graceful **TEA-SERVICE**, remarkable for its simplicity. The amount of decoration is but small, but it is good of its kind, and its symmetry of contour has been chiefly considered, as well as that recommendable quality, economy, we must not think it has claims to attention, on these heads. We must be understood, in some instances, to be doing what we trust the public may also do, when we award due merit to all manufacturers who endeavour to improve ordinary articles of domestic use, while they do not, at

commendation, when deserved, on the ornamental articles which now meet the eye at every turn, and testify to the enlarged acquaintance of our professional designers with the leading principles of elegance, we are not the less prepared to give the merit of genius to the simple, the tasteful, and the economic work, which are to render pleasure as well as service to the humbler classes. We also frequently see, with satisfaction, a simple treatment adopted even for expensive works; it is not elaboration of ornament which makes elegance, or gives dignity to design, a fact with



be fixed by any plumber conversant with such work. They require neither wood nor brick-work about them, but simply to have the supply

at the same time, too greatly tax the buyer. There is no great merit in this as in the production of articles of higher elaboration, produced, as

which all who have studied Classic Art are sufficiently familiar. The principal piece of a **DRESSING-SERVICE**, which all members of our citizens, are

ART-JOURNAL, ILLUSTRATED CATALOGUE.

equally remarkable for the simplicity with which they are designed. The ornament upon them is of the most unpretending kind, and all the better for its simplicity. It consists entirely of a few simple scrolls and fanciful leaves,



which form the handles or encircle the bases of the various articles upon which they are introduced. The general form of each article is well preserved, and its elegance enhanced by the contrast afforded in the ornament thus sparingly in-



troduced; and the result is exceedingly satisfactory. The FURNITURE are of a more ambitious character, and they may also be considered as novelties. The purity of well-made pottery gives it a peculiar applicability for such a purpose, and



the happy manner in which its surface might be rendered agreeable to the eye, by the decoration so readily placed on it, should give it a claim to the attention of persons of taste. Flowers and foliage, or tints of varied hues, might give variety



and beauty to such decorative adjuncts to the garden, of which even the generally-used materials are equally susceptible; and the "coolness" of their appearance, a particularly acceptable quality in those seasons when gardens and fountains are especially agreeable, is also considerably enhanced, when formed of porcelain. The upper fountain of the two which we engrave, is designed in the taste of the seventeenth century, and is, therefore, to be considered as a type of a peculiar style, which was sometimes introduced

with good effect on old Delft ware, and occasionally appeared as a centre for the dinner-table. It is susceptible of bright masses of colour, the boldness of its surface, as well as their occasional singularity, affording full scope for this. Our second example is more classic in its outline, and elegant in its proportion; and ornamented so sparingly



introduced on its surface, and its general effect is that of classic simplicity. It will at once be apparent that there is a decided "opening" for such a branch of pottery-manufacture; one that will much add to the reputation of the Staffordshire manufacturer if taste be properly directed; and one that will be welcomed in the present day, when so much is required and patronized by persons of refinement; we trust



the "fitness" of articles for the localities to which they are to be devoted may be more carefully studied than has been our wont in years gone by; this object, which should be scrupulously considered and provided for by the manufacturer, would achieve entire success. Mr. Holway is an extensive as well as a valuable contributor to the Exhibition, so they who know his establishment might have expected.

THE INDUSTRY OF ALL NATIONS

A BACCHICOTER, manufactured by Mr. LESBROUX, of London, from a drawing by his son, is worthy of commendation. It was designed for an edition of Thomson's "Seasons," the four great divisions of the year are, there-



fore, ranged upon it round a circle, on which appear the twelve signs of the zodiac; in the centre, a floral group, comprises the crocus of spring, the rose of summer, the ripe corn of autumn, and the holly of Christmas.

THE GREEK, with a flower is a charming little figure, sculptured in marble, by Mr. WEEKS, of London. The statue stands about four feet high, and is the portrait of a young lady; but the composition is



purely ideal, and intended to show that portrait-sculpture may be so treated as to contain as much fancy as works that are entirely inventive. Mr. Weeks holds high and deserved rank among British sculptors.



We introduce on this page one of the BAZON and Coventry; the design is graceful and effective, and may be accepted as one of the proofs of our progress in competition with our more advanced neighbours of the continent.

ART-JOURNAL ILLUSTRATED CATALOGUE

The two subjects which occupy this page are from a TABLE-COVER and a CARPET, manufactured

by Messrs. TEMPLETON & Co., of Glasgow. They are termed by the makers, "Patent Axminster."

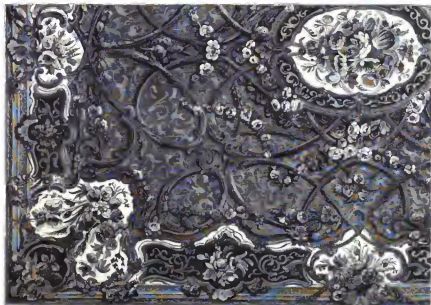
from their close resemblance to the costly and well known carpets first made at Axminster; the



difference being that the latter are composed of separate "tufts" tied in by the hand, while

Messrs. Templeton's manufactures are entirely woven, a process which originated in their

establishment. We need scarcely remark that the softness, beauty, and richness of these fabrics



are all that the most luxurious can desire. The first of our engravings exhibits a most elaborate

pattern of floriated ornament; that of the other consists of flowers and scroll-work, in Louis

Quatorze style. About four hundred pairs of hands are employed in this establishment.

THE INDUSTRY OF ALL NATIONS.

Mr. J. SPARKES HALL, of London, exhibits many improvements in modern boots and shoes, together with a curious series of well executed



facsimiles of ancient ones. The first and second of our cuts are copied from originals of the



fourteenth century; the third is a facsimile of the late Duchess of York's shoe, which was re-



markable for its smallness. His modern improvements exhibit an ingenious adaptation of



Holland lace to ladies' shoes; we engrave a slipper of linen in those decorated for the Queen;



also the front of a shoe in vulcanized india-rubber, upon which a rich pattern is imprinted in gold.



and a model slipper of perforated leather, showing blue silk beneath the ornament decorated with tawny stitching and lace rosettes.

The bronze manufactory of M. VITTON, of Paris, supplies the GROUP OF VASES and the CLOCK engraved below. The former are modelled after the best antiques, possessing great beauty of outline, and are embellished with some exqui-



sition are strikingly apparent; there is an entire absence of everything approaching to pedantry in its details, the introduction of which would have impaired the noble simplicity of the design. The

stately wrought classical designs. The latter forms the centerpiece to a candelabrum; the figures are of bronze, the ornaments and dial of plain gold, the hands and indices of burnished gold. The boldness and breadth of the compo-

base of the clock serves as a pedestal to a well-modelled figure of Michel Angelo. The whole is placed on a stand of black marble, of an equal form. At the establishment of M. VITTON



are produced some of the largest bronze works made in Paris, as well as the more delicate and elaborate objects for merely ornamental pur-

poses. Among these, we saw a few months since a large number of fine statuettes, and a life-size figure of a dead Christ, from the model of Prault.

ART-JOURNAL ILLUSTRATED CATALOGUE

The engraving that commences this page is a portion of a TABLE-COVER, designed by Mr. Gruner, of high reputation as a designer, and executed by Mrs. FURCELL and her assistants, in silk and wool. The pattern, in all its varied compart-

ments, is very beautiful, full of subject, yet clear, distinct, and carried out with a definite purpose; there is no portion of it which may not be made suggestive to a variety of manufacturers. The execution of the tapestry by Mrs. Furcell is most

perfect; this, however, might be looked for in one who, we believe, was trained in the school of the late Miss Lowwood, whose exhibition of needlework was, it will be remembered, for many years, among the popular sights of the metropolis.



The group below consists of GLASS objects, contributed by M^r. J. G. GIBBS, of London; they are of the purest crystal, engraved in the

most elaborate and artistic style; the forms are borrowed from the best antiquity. The large Jug to the left is termed the "Neptune Jug," a re-

presentation of that deity being depicted upon it: next to this is a Cream-jug, ornamented with a kind of arabesque pattern. The two large Jugs



that succeed are beautifully decorated with various devices, in which the water-lily takes a prominent

place. The other objects are a Water-caraft and Tumbler, adorned with the fuchsia plant. We

scarcely ever remember to have seen glass more exquisitely engraved than in these specimens.

THE INDUSTRY OF ALL NATIONS

The group of *Ceres* and the *Nymph* is by Mr. *Thorne*, of London, one of the most rising sculptors of the English school; the subject is treated with considerable originality as well as

with much artistic feeling. The *Nymph* seems to be persuading the boy to direct his shaft towards a certain object, which *Cupid* appears averse to do; it is evidently a matter for consideration,



The three *Decanters* which were next introduced are from Mr. *Summerfield*, of London, whose manufactory is at Birmingham, and is carried on under the name of *Lloyd & Summerfield*. These



objects are of the purest cut crystal, ornamented with much novelty of design, the forms whereof

being in very bold relief, bring out the colour of the glass in an exceedingly brilliant style.

The designs for *Beads* *Wool-work*, which fill the present column are exhibited by Mr. *Astley Hall*, of Manchester, and are constructed on an improved plan, which places the outline on the curves or foundation to be worked, together with many of the colours indicated in their



places; only leaving it to the worker to increase the number of shades by which the requisite softness will be produced. By this means the constant necessity for counting the threads is obviated, errors in counting are avoided, and the



sight is less taxed. The interlaced patterns we select are simple and good in design; the slipper is decorated with ivy leaves and berries, and is novel and effective. The taste for embroidery has ranked high amongst the elegant sets of



refined life in past ages, and modern experience teaches us that it still maintains its position; it will become the manufacturer therefore to devote his attention to this widely-spread taste, and endeavour to obviate any tendency to common-place imbecility of design in its pursuit.

ART-JOURNAL ILLUSTRATED CATALOGUE.

To the contributions of Messrs. FERRISS, of London, we shall endeavour to do justice in other pages of our catalogue. They consist of hardware, and comprise the ordinary productions



of the trade,—of excellent design and manufacture. We occupy part of the first column of this page with a few of the most artistic of these



firm: an IRON KNOCKER, the handle of FINE IRON, and three metal BELL-PULLS. It is scarcely necessary to say that if our selections were not thus



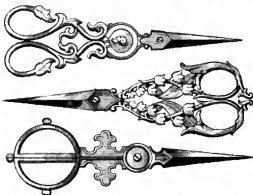
limited, we should be able to afford a far more adequate idea of their work; they add considerably to the exhibition of British Industrial Art.

SHERRIFF has been long famous for its manufacture of cutlery, and the improvement exhibited in all its various branches of the trade we have already had occasion to note. Mr G. WILKINSON, one of its best SCISSOR-MAKERS, has contributed some specimens of his own peculiar art which



form of the Lily of the valley and its leaves, are very tasteful. There is quaintness, as well as elegance, in the other designs. In fact, restricted as design may appear to be when applied to so simple

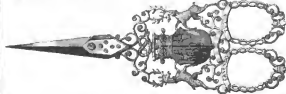
fully bear out the deserved reputation of that enterprising town. The first on our page has been manufactured by him for the "Indian Steel Company," and is of much delicacy and elegance of design. The group which follows presents great novelty of form, the flowing curves of the handle,



as a cost-of-arms to this purpose. The arms, supports, and, and motto of the Cavendish family are made to do duty in this way without any disagreeable result. We conclude our series

a thing as the handle of a pair of scissors, it is surprising how varied it may be made through the aid of a clever designer. We present an ingenious adaptation of so unprepossessing a subject

with a large pair of scissors, which also have "the charm of novelty." Sheffield, in this branch of Industrial Art, has maintained its supremacy, and defied the world, for more than



a century. We have no fear of its losing the mark it has obtained. During a recent visit, we were offered, by one manufacturer of scissors, the means to examine no fewer than 7000 ex-

cellent designs. Mr. Wilkinson has not only studied to improve the form of objects of a comparatively costly character; he has very essentially improved the commonest articles of



his profession, so as to make them more convenient as well as more elegant. This advance is espe-

cially shown by comparing the tailor's razor of his manufacture with those in ordinary use, and

especially the scissors constructed with a very simple spring, so as to open and close with facility.

THE INDUSTRY OF ALL NATIONS.

From a variety of fine SCULPTURES exhibited by Mr. THOMAS, of London, we have selected five examples, to show his diversified talent and taste in those objects to which this branch of the fine arts is most generally applied. Mr. Thomas has for a series of years been engaged under Mr. Barry, in



modelling the ornamental details of the New Palace of Westminster, and in sculpturing several of the figures with which it is slowly decorated, and others which are destined hereafter to find a place in that magnificent edifice. His labours in this important and arduous undertaking have been

unwearied, and his success has kept pace with his exertions. Many of the



aristocratic mansions throughout this country can also testify to the varied

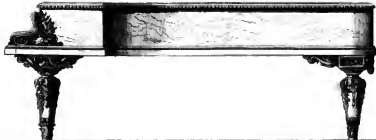


ART-JOURNAL ILLUSTRATED CATALOGUE

character of his natural and acquired endowments as an architect, sculptor, decorator, and designer, in all of which professions he seems



A PIANO-FORTE, by HORN, BROADWOOD, of London, the eminent makers, is an elegant ex-



style of Italian ornament. The case of this instru-

ment, which is made of the beautiful Amboyna wood, was manufactured by Mr. Norment, of London.

equally at home. The first group we have here engraver is entitled CHARITY, it is intended for part of a monumental group; the treatment of the subject is most artistic, and the sentiment conveyed is perfectly in unison with the title. By the side of this is an engraving of a bronze figure from Shakespeare's "Tempest," ARIEL, RESCUING THE DROWNED; Mr. Thomas's conception of the character is very spirited. Below these figures is a CHIMNEY-Piece for Preston Hall, the new mansion of Mr. E. L. Berra; the subjects



ample of the taste they frequently display in the manufacture of their instruments. The legs, and

on it are Dorigene and Oribelle, from Chaucer, with a medallion of the poet in the centre, and on either side of the principal figures a bas-relief carrying out the incidents of each: the above and fender which are to be placed here, we purpose engraving elsewhere. The statue of FAITH ROMANOW follows on this page, a work of goodly proportions, telling its own pathetic tale; and lastly FOUNTAIN, of which the subject is "Aris and Galien" surrounded by Tritons; this, like the chimney-piece, has been executed for Mr. Berra's mansion.

each portion of the case as an admit of decoration, have been judiciously supplied with it in the rich

THE INDUSTRY OF ALL NATIONS.

This page commences with a **PORTFOLIO-TABLE**, carved and inlaid; and an **EROST TRIPUD**, both manufactured by Mr. WILLIAM JONES, of Masefield, Dolpilly, N. Wales, from designs furnished by a gentleman of that neighbourhood, Mr. H. Buryley: these contributions, from a place so far removed from the great seats of operative industry, are highly creditable to the parties who have brought them forward. The table is



Our next subject is a **HOT-AIR STOVE**, made by Messrs. LEARNED & THURTELL, Albany, United States; it is intended for a drawing-room or parlour, and consequently is manufactured with a considerable amount of careful ornament to render it suitable for its destination. There is doubtless some peculiarity in its internal construction with which we are unacquainted, for the drawing supplied to us from America speaks of the



stove being patented. The basin at the top holds, we presume, water, as we have seen in similar articles in our own country; and in this basin is placed a small vase of coloured glass, probably for the same purpose: the latter gives a jollesome finish to the entire object, which is one highly creditable to the manufacturers as both useful and ornamental.

intended for displaying a portfolio or book of large prints; the top of it lifts up like a reading-desk, as seen in the engraving, and its great recommendation is that it avoids the necessity of stooping. By removing the hinges in the front and sides, it is converted into a table for the purposes of writing, drawing, &c. Mr. JONES is, we understand, a person who has risen himself from the condition of an ordinary carpenter to one of considerable provincial eminence as an ornamental carver in wood.



Among the numerous contributions from Germany is a **SECRETAIRE**, by M. VON HAGER, of Erfurt. It is made of walnut-wood, the design is in



the Renaissance style, and it is beautifully ornamented with inlaid ivory, ebony, and brass, forming altogether a good example of manufacturing art.

ART-JOURNAL ILLUSTRATED CATALOGUE.

This engraving is from an improved ventilating **BRASS GRATE**, manufactured by Mr **JEAKS**, of London; we introduce it chiefly on account of its excellent ornamental character, but it possesses recommendations that entitle it to extensive use; the principle of these is that, when heated, it emits no unhealthy effluvia.



We introduce here a **REVOLVING TABLE**, for the use of sculptors and modellers, manufactured by **FARNER & Co.** Brighton, after a model by **Don Giovanni**, the



sculptor. It is to enable sculptors to turn round with facility any object upon which they may be at work. It is equally applicable for showing busts or statues.

A musical instrument called a **CHITARRA** occupies this column; it is invented and constructed by **Don JOSE GALLERGO**, of Malaga. The form of this ingenious piece of mechanism comprises that of the harp, guitar, and violoncello; it has thirty-five strings, twenty-six of which and twenty-one pegs upon the lary,



producing in their full extent the diatonic and chromatic scales: six strings belong to the part of the Spanish guitar, while the violoncello part has three silver strings and eighteen pegs. The pedestal by which it is supported is so constructed that the instrument may be either elevated or depressed at pleasure.

THE INDUSTRY OF ALL NATIONS.

MESSRS. HARRISON & PARSONS, of Ipswich, exhibitors, among other articles, the Vases, in artificial stone, which we have selected for engraving.



we do this, however, rather with reference to the material than to the form, which, though



good, are not new. The material differs from all other artificial productions for similar pur-



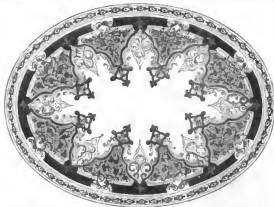
poses, but forming its base; it may be made to imitate any description of stone, from the finest marble to the coarsest and commonest sandstone.

The town of Wolverhampton is a formidable rival to Birmingham in the extent of its manufactures in *pajour-mahel*, and its light iron-ware productions of every kind. It is almost impos-



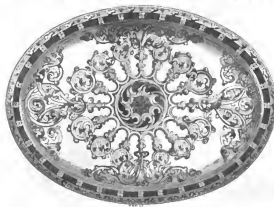
sible to enumerate the variety of articles included in this category; but we say in particular, allude to the variety of every description, gold-ware, candlesticks, bread-baskets, ornamental baskets,

its chief manufactures, and, consequently, their contributions to the Great Exhibition are on a proportionate scale of magnitude and importance, including a large variety of trays, sundry



ware, turnt coal-scopes, dish-covers, &c. On this and the following columns we engrave six subjects—a Tazza, a Coal-vase, and four Trays, all, excepting the second, made of *pajour-mahel*.

The TAZZA is decorated with Roman ornaments in gold and colours, the Coal-vase is also ornamented with the same materials. The Trays show the several styles of the Byzan-



tine, the German Gothic, the Renaissance, the Alliance, and the Elizabethan, worked in gold, pearls, and colours. Many of the manu-

factures contributed by Messrs. Walton are painted with such taste and elegance, so representations of landscapes, and bird-and-forest

ART-JOURNAL ILLUSTRATED CATALOGUE.

across. The perfect adhesion of an opaque glass fused by heat on the surface of wrought iron, so

as to produce a smooth and even enamel, capable of withstanding the effects of the atmosphere,



has long been considered a great desideratum by all manufacturers of hardware; this object attained. The articles shown are covered with



two kinds of enamel; that intended for better more common goods is black, and is applied to purposes in of a pure white colour, that upon most the articles both inside and out. It is less



expensive, and is equally effective and durable. the contributions of the firm are very attractive.

A FLOWER-SOLVER, manufactured by Mr. BAL-LENT, of Birmingham, is well and appropriately designed; the cup exhibits grapes and leaves of the vine, the stem of which is twisted into a handle.



A CARRIAGE LAMP, contributed by Messrs. HALLMARK, ALDERSEY, & Co., of London, forms the subject of the engraved engraving. It is made of the finest and most massive glass, beau-



tifully cut and set in silver; it is, altogether, one of the richest and most creditable specimens of such articles we remember to have seen.

THE INDUSTRY OF ALL NATIONS

A piece of **PAPER**, contributed by the Committee of the **CRYSTAL PALACE SCHOOL**, of **DUNDEE**, shows

much beauty of pattern, which is composed of groups of flowers, with fern leaves and trails

of ivy; it is designed by the present assistant-master, Mr. Brown, who was a pupil of the school.



A **DESIGN**, designed by Mr. W. WILSON, of **BURWICK** upon **Tweed**, exhibits a novel and good form, applied to a

We introduce here a **HALL STOVE**, manufactured by M. H. C. GRAMMERS, of Rotterdam: it possesses nothing new in its shape, but the ornamentation is in good taste, and stands out in bold relief from the flut.



common object: one that might be made an ornament to the garden. It is the work of a highly ingenious artisan.



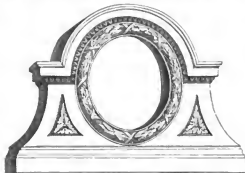
their decorative furniture of every description: much of their carved work finds its way to England, and several contributions in this style will be found in the Exhibition.

The Vase beneath, and the Fan-light, or, as



The engraving that follows is a portion of a very elegant Carpet, contributed by Messrs. WHITE, SON, & Co., of London. The pattern of

the French form is, the *Oeil de Boeuf*, answering the text solution, are made of white terra-cotta, by M. GARNIER, Jun., of Paris. The former is of considerable size, presenting an agreeable adaptation of somewhat novel ornament to an antique form. The fan light is, of course, intended to



the ground consists of a few well-arranged sprigs, and is, accordingly, very simple; but the entire, the corners, and the border present features of

surround a doorway: it is about five feet in width, by three feet and a half in height. The material is very durable, and possesses the advantage of being far cheaper than stone, to which it bears a strong resemblance; it is much used in Paris for all kinds of architectural decoration.

great boldness and beauty. The wreaths of flowers on the last portion, and the shells and scroll-work on the corners, exhibit taste in the



designer of so common kind; nor will the pattern of the inner border fail to attract the attention of

all who estimate purity of character in ornamental work. This design emanates from Messrs. White

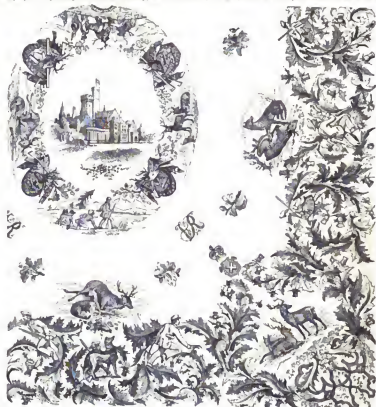
& Co., who are, consequently, the proprietors; they exhibit several other excellent productions

THE INDUSTRY OF ALL NATIONS.

A fine damask linen TABLE-CLOTH, manufactured by Messrs. Hirst and Son, of Danversham, is here introduced. It was made expressly for the use of Her Majesty when sojourning at her house in

the Highlands, and is, therefore, most appropriately adorned in the centre with a view of the Castle of Inverness. The borders present illustrations applicable to the healthy and manly amuse-

ments pursued by Prince Albert and the visitors to the Royal residence, especially that of deer-stalking, and the spaces are filled with some of the natural productions of the mountains and the glen.



On this page we exhibit another of the Damasks manufactured by Messrs. Cox, of London and Coventry. Those who are acquainted

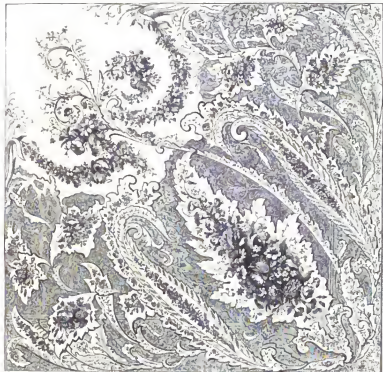
with the ancient and venerable city are well aware of the numerous advances they have made of late years, not only in design, in which we

believe the Government school has very largely contributed, but in the study and application of colours, and especially in the process of dyeing.



ART-JOURNAL ILLUSTRATED CATALOGUE

Mr. BARNETT, of Norwich, contributor some
splendid Shawls, woven expressly for the Exhi-
bition. Our space does not permit us to enlarge
upon the beauty and merit of those we have
here engraved; it must suffice to say they are of
the very best order of design, material, and



workmanship. Norwich has long been famous for this description of manufacture; it will lose none of its credit in the Great Exhibition.



THE INDUSTRY OF ALL NATIONS.

Messrs. FAYE & SON, of Bath, contribute a Vase, in silver, after a marble antique in the Capitoline Museum. It is enriched with bold and highly relieved foliage and interlacing flower scrolls, the handles springing from foliate heads. The work is a very elegant specimen of art, and highly creditable to a provincial manufacturer.



We follow with a Vase formed of very different material. It is of terracotta, designed by the distinguished sculptor, and architect, Mr. John Thomas, and is executed by Edward Burt, Esq., who, having discovered a valuable vein of rich clay on his estate, at Aylesford, in Kent, has established a pottery there in order to make it serviceable to Art as well as to Commerce.



of utility in agriculture and in manufactures. We shall heartily rejoice if this project succeed; as present, it is notorious that in England with "all appliances and means," we have, of late years, almost entirely neglected this branch of Art.

M. FRANKS, the eminent sculptor of Brussels, has contributed some of the poetical works for which he is so justly famed. Among others, he has sent to the Exhibition the kneeling figure here



engraved, it represents a damsel, quaintly habited in the taste of the fifteenth century, in an attitude of devotion: the figure is remarkable for its purity of treatment and delicacy of expression.

The musical instrument is manufactured by Messrs. LUTY & Co., of London. It is termed an HARMONIUM. We, of course, have had no

opportunity of testing its merits as a musical instrument, but, knowing that this long-established firm have good repute in the profession,



there is no doubt of its possessing excellencies in this respect, which we must leave to others

more competent than ourselves to decide. We can testify to the elegance of its external appearance.

Throughout the task we have undertaken, to prepare this "Illustrated Catalogue," we have scrupulously avoided instituting a comparison between the works of any one manufacturer and those of another, whether of our own country or from foreign lands. Our object is to select, according to our best judgment, whatever is most beautiful and most worthy of being singled

out from the great mass of contributions for imperial notice, let who may be its producer.



out from the great mass of contributions for imperial notice, let who may be its producer.



On this occasion the critic's pen is used only to describe and to eulogize; were it desirable to



use it as generally applied, we might sometimes be tempted to enter upon the comparative merits of many of these works we have had the opportunity of inspecting, both in the Exhibition and in the saloons of the fabricators. It will, however, be thought by all who are fortunate enough to get a sight of the most ex-

quisite TEA AND COFFEE SERVICE, manufactured by M. DUBANN, of Paris, that any work of a similar character brought into competition with it will be put to a severest, so pure is the taste that has designed, and so skilful are the hands that have been engaged in working it out. The whole service is of massive silver, modelled, chased, and engraved in the very first style of

art. It is valued at forty thousand francs. The centre-piece stands about four feet high; the figures introduced into it are of bronze, which affords a striking and effective contrast to the white metal. Motely in the centre-piece are four bas-reliefs for vases, &c.; the angles of the tripod support each a small vase, on which the cream-jug, sugar-basin, and water-basin are



placed; the body of the tripod forms a tea-urn, and on the platform at its base stand the coffee-pot and the tea-pot; the cream-jug and coffee-cups are ranged round the bottom. It may readily be imagined, when the whole are "placed in position," how superb an appearance is presented by such a combination of truly rich and costly

objects. But let the centre-piece, we have engraved the cream-jug, the sugar-basin, and the tea-pot; it will, of course, be seen that neither of these is engraved to its proper scale of size, but drawn to suit our column. The coffee-pot and water-basin are no more. We regret we could not arrange for their introduction also.

THE INDUSTRY OF ALL NATIONS

The next engraving is from a piece of Wood-Carving, exhibited by Mr. KORTLAND, of Ipswich. It is composed of wheat and wild flowers, and is executed with considerable spirit and freedom.



The corner of this page is occupied by an engraving of a HALL or OFFICE STOVE, manufactured by Messrs. ROBERTSON, CARR & STEEL, of the



Chantry Works, Sheffield. Other of their excellent and useful productions, on a larger scale will be found in subsequent pages of this catalogue.

A Globe, manufactured by Messrs. JONNISON, of Edinburgh, is a beautiful work of manufactured art, showing some fine carved work, the principal features of which apply to the subject.



This engraving is from a group, the work of a true artist, BAS GUYONNET, of Brighton; whose models from nature are of the purest and best order of Art. It is the only object he has sent.



ART-JOURNAL ILLUSTRATED CATALOGUE

The Carpets here engraved are from the manufactory of Messrs. HENDERSON & WILSON, of Leamvale, near Edinburgh, successors to the well-known firm of Whytock & Co. This establishment is celebrated for its make of the

finest sorts of carpet, those termed "impostry" and "velvet-pile," and also of carpets similar to the Axminster, Persian, and Tourney fabrics, woven in one piece. We have seen carpets produced by this firm equal in texture, richness of

colour, and beauty of pattern, to any foreign fabric of a similar description; engravings from some of these, with a long-extended notice of the extensive manufactory, were introduced into the *Art-Journal* about four or five years since. The



improvements introduced by Mr. Whytock and his successors into the process of weaving and printing these carpets have been the result of much study and long experience; we may adduce

as one instance as regards the weaving, the new method of applying the shuttle. Those who have seen the workmen at the Gobelins, in Paris, employed on similar carpets, must have observed

how the shuttle is thrown from hand to hand; instead of which Mr. Henderson uses the cross-bow, to draw it at once across the largest carpets, thereby saving a considerable portion of the



workman's time. Again, the necessity for expensive block-cutting and engraving has been superseded, and the process greatly simplified by the plans adopted by the present proprietors of this

establishment. Among the other advantages arising from their new method, not the least important is that there is scarcely any limitation to the number of colours that may be used in

line without increasing the expense; more than twenty are not unfrequently thus introduced, while a good opportunity is afforded to the customer to select to vary his colours or shades.

THE INDUSTRY OF ALL NATIONS.

A TABLE-COVER, of which we introduce the half, is worked in tapestry by M^{lle}. HENRIOT and her assistants, of Paris. The design is in the Arabesque style, and was furnished by M. Clerget, a most elegant designer and skilful draughtsman.

especially for textile manufactures; he carries

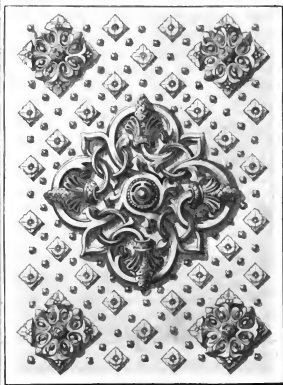
on an extensive business, in conjunction with M^{lle}. HENRIOT, in the production of tapestries. In the centre of this table-cover is the well-known Arabic inscription, "God is great," the pattern is executed in the finest silk and wool.



A STATUE of Fisher de Quincy, Earl of Winchester, to be erected in brass, is by M^r. J. R. WINTHROP; it is intended to be placed in the House of Lords.

MADAME GARNI, who conducts one of the most celebrated book-binding establishments in Paris, exhibits several specimens of the Art.

which has made her house celebrated among the bibliopoles of the French metropolis. We engrave on this page an Ivory Book-Cover.



ART-JOURNAL ILLUSTRATED CATALOGUE

A danish TABLE-CLOTH, manufactured and exhibited by Mr. JOHN HARRING, of Warrington,

town, near Belfast, shows a clever floriated pattern. The design is by Hugh Eslin, of the

Belfast School of Design, to whom was awarded Lord Dufferin's first prize for a table-cloth.

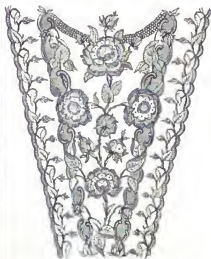


AN ALBION COVER, by Mr. BUNDEY, of Cambridge, is highly creditable



to the taste of a provincial binder; it is executed in gold and colours.

MAURICE B. R. & T. BROWN, of Glasgow, extensive manufacturers of embroidered muslins, exhibit several truly beautiful designs, principally



adapted to ladies' dresses. We engrave from their various contributions a CUSHIONCASE of a simple but very elegant pattern of roses and leaves.

THE INDUSTRY OF ALL NATIONS

The four engravings which occupy these two columns represent Coat-Arms, in use the only term that seems applicable to their purpose, although it is inappropriate, when the form of these objects is regarded; they are manufactured

in Japan, and iron by Mr. H. FRANKCORN, of Wolverhampton. The first, the shape of which assimilates to that of a tureen, is ornamented in the Italian style, and is worthy of being imitated in silver. The two following are of the form of vases; both



are very elegantly designed, especially in their pedestals. The last represents a nautilus shell set on a piece of coral rock; the handle of the

lid represents a sea-horse. The novelty and beauty of this design must challenge approbation; indeed, the entire set quite merits being



devoted to a more honorable, though not more useful, purpose than that for which each is in-



tended. They are designed and modelled by Mr. F. Wright. Wolverhampton has long been cele-



brated for its japanned iron ware; such works as these must tend to increase its reputation.

In conformity with our plan of representing every noteworthy producer of articles which exhibit improvements derived from the influence



of art, we introduce upon this and the succeeding columns four examples of the ENGLISH WARE contributed by Mr. A. W. GARNER.



of London. The first two are worked in gold on rich silk, and are designed mainly for court dresses; the other two are wrought in silk upon

ART-JOURNAL ILLUSTRATED CATALOGUE

black cloth; the ornamentation is derived principally from natural flowers. The style of the moderns made little afford little opportunity



for the embroiderer and ornamentist to display their skill; the only garment which admits of the least approach to elegance being the vest;



and even this is generally discarded by persons of good taste. In the patterns here engraved, however, we see much that is truly graceful.

Mr. TOMLINSON, of Ashford, Derbyshire, one of the many ingenious manufacturers of the native spars and marbles of the county, contributes, among other articles, the TABLE here



AN ENTRIAD, or to designate it more correctly according to its varied contents, a com-

pendium for the writing table, made and contributed by Mr. COLE, of Glastonbury, is a most



useful and elegant work of manufacturing art; novel in character when the variety and arrange-

ment of its "fittings" is considered, and most elaborately engraved and richly ornamented.

THE INDUSTRY OF ALL NATIONS.

In the notices which have appeared from time to time in the *Art-Journal*, descriptive of the progress of manufacturing design, we have found occasion to notice those productions of foreign houses remarkable for ability and taste, and among the rest that of M. MOREL, who has, however, for the last few years become a resident in London. His works are equally deserving of high praise, as well for design as for execution, and display great and varied fancy combined with the highest artistic finish. We furnish three

elaborate ornamental taste of the East, the quadrifolds containing views of the principal buildings in Constantinople; it is a very brilliant

production. Not less so is our second example, an *ARABIC* Cup, the mountings richly chased in gold, and their effect heightened by the most

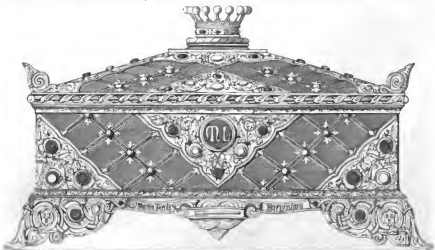


examples from his contributions to the Crystal Palace. The first is an *ENAMELLED* Cup, executed for the Sultan; it is richly decorated in the



vivid enamel. Our third engraving is from a rich *COPPER*, jewelled, chased, and enamelled, and intended to contain the original manuscript

of M. Guizot's "Life of Washington." We shall engrave elsewhere other of the productions of M. Morel, which are all of the highest merit.



We continue on this page engravings from the contributions of M. Munnz. The first is a Vase, in the style of the sixteenth century; the bowl is made of agate and the setting of gold enamelled, the handle is composed of drapery attached to a single figure at the top; a group of a Triton and a Nereid form the stem. The beauty of the foot is enhanced by the



the top, bowl, and stem are made of separate pieces of rock crystal, richly encased in enamelled gold. The Cup in the

centre is a truly elegant piece of workmanship; the design which forms the handle is one of the most perfect



introduction of pearls. The next is a Triton's Head, of massive silver, with six branches for lights; the style is that of

specimens of modern enamelling in gold; some of the colours are exceedingly difficult to produce. The shell-like bowl is one entire piece of lapidary; the stem is formed

is a statue of Queen Elizabeth on horse-



Louis the Fifteenth, with flowers, birds, and squirrels introduced. The Cup and Cornucopia to the left at the bottom of the page is in the style of the sixteenth century.



of struggling acrobats, with their tails entangled and resting on a bed of coral; the foot is enamelled in the best Italian taste of the Cellini school. The last subject is a Plafond of gold and silver, enamelled; the body is of rock crystal. There



lack, by M. Morel, which is a fine example of silver enamelled with the handiest

THE INDUSTRY OF ALL NATIONS.

The Porcelain manufactory of Messrs. HERBERT MARRON & Co., is at Stoke-upon-Trent, the principal town of the famous district known as the "Staffordshire Potteries." The establishment has long been eminent for the production of admirable works. The head of the firm is a gentleman of accomplished mind, and of refined taste, and has large resources have been made available to obtain good models, and valuable assistance, wherever they could be found, in all parts of Europe. His collection at the Exhibition consists

of an extensive variety of objects, all of which are of the highest merit; it is not too much to say, that the corner of the gallery in which they are placed has

been a point of attraction to visitors, and that here, at all events, foreigners have been enlightened as to the capabilities of British producers to encounter competition with the whole world. We engrave several of Messrs. MARRON



A Co.'s production, commencing with the DRESSER SERVICE, purchased by Her Majesty. The series (which is entirely original in the models, arrangement, and decoration) is one of exceeding beauty, designed with pure artistic skill, and exhibiting in manipulation and finish, a degree of refinement that has rarely, if ever, been surpassed in modern art. The subjects have been elaborately treated; it would seem as if the utmost

very novel combination. Our first cut is of a JELLY OF CREAM-STAND; the companion to which is an "AMBIETTE MORTIER," between them is a FLOWER



amount of labour had been expended upon them,—yet nowhere do they seem crowded or overlaid; a result which arises, no doubt, mainly from the delicacy of the material, the figures and ornamentation being of "Porcelaine," slightly gilt, and the backs of richly decorated porcelain,—a



BASKET, supported by four figures, representing the seasons. A THYRSUS, a FRUIT-BASKET, and an OVAL FRUIT-BASKET, follow, and fill this page. The second page devoted to the works of Messrs. MARRON & Co. continues

ART-JOURNAL ILLUSTRATED CATALOGUE.

with the **SALT-CELLAR** and small **FRUIT-DISH**.



or **COMPUTER**, and termination with the **SHAW** or **CREAM-BOWL**,—parts of the beautiful dessert-

service, of which the leading objects are pictured



on the preceding page. The two groups of chil-

of the last century, and it is not too much to say that the delivery of the modelling, and the grace and truthfulness of the attitudes have been seldom equalled. The two small **FAUCES** are elegantly formed; they are in gilt **Porcelain**, with



the stands in porcelain tastefully decorated, and serve as **condiment-stands**. They are original designs in the style and costume of **Louis Quinze**. On the third page are pictured, first, a **Vase**



two **PLANTS** of **terra cotta**, designed expressly for Messrs. Minton & Co. by the Baron Marchetti; it is of very large size. The second is likewise for plants, and also of **terra cotta**; a fine com-



position, executed with exceeding care. The third cut is from a **WINE-COOLER**, which forms the centre-piece of the dessert-service, and is, on the whole, the most mysterious object of the collection; our limited space does not permit us

draw sporting with goats are in **Porcelain**,—that exquisite material in which England remains unrivalled.



and which is only second to marble. They are original designs, executed in the style and spirit

THE INDUSTRY OF ALL NATIONS

to describe it; and our fourth is from one of the numerous admirable STATUETTES, in Paris, ex-



hibited by this house. Of these Meurs Minton & Co. have produced many, from original sources.



were after eminent foreign sculptors, but chiefly from the leading artists of our own school. In

the whole collection, we find abundant evidence of that matured judgment, and refined taste, by



which the manufacturers of Great Britain have been, of late years, elevated; and which, in the



present Exhibition, have so largely contributed to uphold, and will extend, our national reputation.

ART-JOURNAL ILLUSTRATED CATALOGUE.

The silver manufactures of Mr. M. ENAMUEL, of London, evince great taste in design, and some very excellent workmanship. He exhibits a variety of objects besides those we have here engraved, such as gilt candlesticks, gilt plate, and



with china racks and medallions, pieces of gold manufacture. The first we introduce is one of a pair of rock crystal CAROLETHES,



silver, and gilt, with figures of children, sea-horses, and marine objects, composing the base. The next is a FLOWER VASE, of richly coloured glass, mounted in silver; the handles are made to represent boys climbing upwards to the

flower stems, and the pedestal is composed of groups of figures and horses. The two objects commencing the other columns are silver DROSTY STAMPS. The vine forms their stems, and the

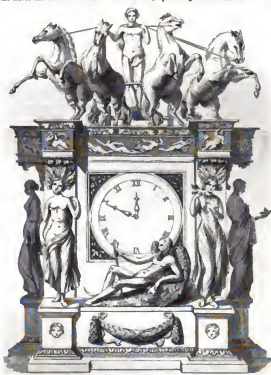


base of which children are at play with animals; the dishes are supported by a sort of trelliswork of the leaves and fruit of the vine. But the

most important contribution of this manufacturer is a large silver CLOCK, designed by Mr. WOODHOUSE, the well-known sculptor: it is, truly, a fine work of art. Between four figures,



indicating the "Seasons," is one of "TIME," in the attitude of repose; above the dial is a fine relief, representing the winds and their various



attributes; and, surmounting the top, is Phœbus driving the chariot of the sun; the composition of this group is full of spirit, and the whole of

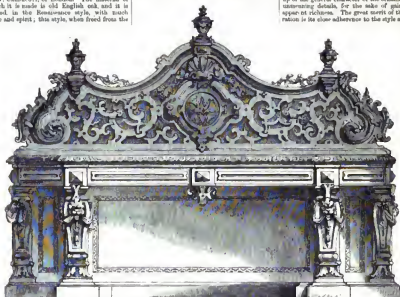
the figures are exceedingly well modelled. Mr. Enamuel has done wisely in securing the services of an artist of acknowledged talents and repute.

THE INDUSTRY OF ALL NATIONS.

The appended engraving of a **SHEDBOARD** is from one manufactured and contributed by Mr. T. W. CALDEROTT, of London. The material of which it is made is old English oak, and it is carved, in the Renaissance style, with much taste and spirit; this style, when freed from the

affetation with which designers are too apt to deform it, is well adapted for displaying a bold

and effective ornamentation, such as we find in the work before us. There is here no breaking up of the general character of the ornament into unnecessary details, for the sake of gaining an apparent richness. The great merit of the decoration is its close adherence to the style adopted,



The **CARPET** is manufactured and exhibited by Mr. HARRIS, of Southampton. It is termed a "Tremble valour pile," and is one of several

equally excellent, which this extensive manufacturer contributes. The design is a cordon of leaves of the Chinese arbutus, enclosed by a

trails work of flowers, among which the *lilium* is conspicuous. This is among the best productions of British manufactured art.



ART-JOURNAL ILLUSTRATED CATALOGUE.

The contributions of our fellow-subjects in Canada are not without a considerable portion of interest, but they are chiefly of a character which does not come within the scope of our plan of illustration; indeed, are not of a description to admit of it, even with less limitation. The wealth of Canada lies in her agricultural and mineral productions, of which she contributes to the Exhibition a large variety of examples. Among her textile fabrics are several specimens highly creditable to her manufacturers, and there are some engineering objects worthy of notice, especially a powerful and most elegant fire-

community exhibit no little taste, and spare no expense, to put their carriage and all its appointments, into suitable condition. The

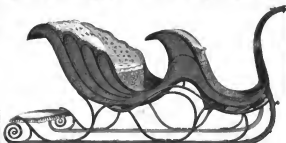
harness of the horses is generally very gay, and beautifully ornamented; while the fur robes in which the riders envelop themselves



engine. We have selected, from the few productions that we deem would make effective engravings, a dozen of elegant proportions, manufactured by



Mr J. J. BAUMER, of Quebec. "Sleighing," as it is termed, forms one of the principal amusements of the Canadians of all ranks, who can afford to keep one of any description, and the wondrous part of the



to exclude as much as possible the severity of the cold, are often very costly. There are

some choice specimens of all these objects in the Canadian department of the Exhibition.



which are worthy of minute inspection. The rides and drives round about Quebec, Montreal,

Toronto, &c., are, during the winter months, quite lively with the snowy equipages, and



reminiscent with the bells suspended from the heads of the horses. The FERRIS, also engraved on this page, is manufactured by

Messrs J. & W. HARRIS, of Montreal. They are made of black velvet, boldly carved, the chairs are covered with crimson and gold damask.

THE INDUSTRY OF ALL NATIONS.

We introduce here the pedestal of a FINE
PLACE, manufactured of Derbyshire black marble,

by MESSRS. JOHN LOMAS & SONS, of Bakewell.
The caps and bases of the columns are of Sicilian

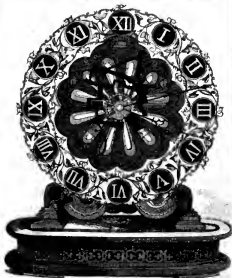
marble; the frieze is inlaid with an elegant scroll,
executed in marble of various beautiful colours.



The three ancient KNIFE-HANDLES are from the collection of the GRAYD DRYE
OF BAZE WARRAN, who possesses several thousand ranging from the thirteenth
to the eighteenth centuries. Many of these are both curious and very costly.



MESSRS. B. R. & J. MOORE, of Clerkenwell, exhibit an eight-day Clock, with
lever escapement, striking the quarters and hours on fine cathedral-tone bells.
The plate upon which the clock stands is steel, highly polished and enamelled.



The CHANDELIER is manufactured by Mr J. PARADAY, of Lon-
don. It is constructed upon a principle for which a patent has
been obtained, whereby all noxious vapours arising from the gas
are carried off, by means of the descending draught; the lights



being enclosed in covered
chimneys or globes, and,
by a process which we
have not room to explain,

the burnt air is discharged
into the open air, or an
adjoining flue; the value
of this must be manifest.

ART-JOURNAL ILLUSTRATED CATALOGUE

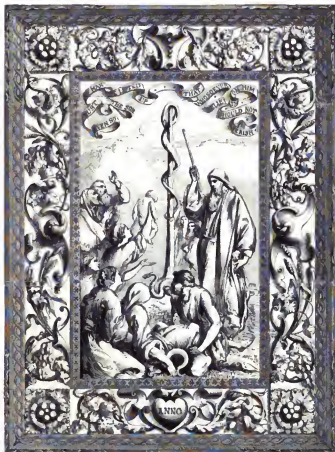
The ALPO-RELIEVO, by Mr. NELSON, of London, is a portion of a monument proposed to be erected to the

memory of the officers and men of the fifth regiment of the line, who fell on the banks of the Satuj, in 1845-6.



A BOOK-COVER, carved in box wood, by Mr. Rogers, forms one side of a magnificent Bible, exhibited by Mr.

Nasat, of London. The subject of the beautiful design in the centre, is "The Brazen Serpent in the Wilderness."



We insert on this column another KNIFE and SUGARS, from the collection of the GRAND DUC OF SASS WEIMAR.



The handle exhibits busts of Gustavus Adolphus, and Christian, king and queen of Sweden.

THE INDUSTRY OF ALL NATIONS.

We fill this page with engravings from the productions of Messrs. T. WILKINSON & Co., of Birmingham,—works which entitle these manufacturers to much praise. A scene from Paul and Virginia, "that



gentle story of the Indian Isle," furnishes the theme for the first of our examples; the incident chosen from the tale is Paul's expostulation previous to Virginia's departure for France, the flowers of the Indian



plant which overarches them forming a graceful receptacle for lights. The centre-piece, with tritons and sea-symphs under a canopy of real coral, is an intricate work. The second CANDLESTICK at the foot of our

page is a poetic conception admirably adapted to its uses; the subject, Prometheus endeavouring to regain the fire taken by Jupiter. The TALL VASE, — a vase of Etruscan form resting on a rock, has the novelty of a



basement decorated by figures of children playing musical instruments. These works are very creditable to the establishment from which they



emanate, and are satisfactory testimonials of the zeal with which the manufacturers of our large and celebrated industrial works are determined to uphold the character they have so long enjoyed, and desire to maintain.

ART-JOURNAL ILLUSTRATED CATALOGUE

The first engraving on this page is from a carved Book-Cover, by Machez (1861), of Paris.

It is a beautiful example of the taste which this celebrated house displays in all matters of art.

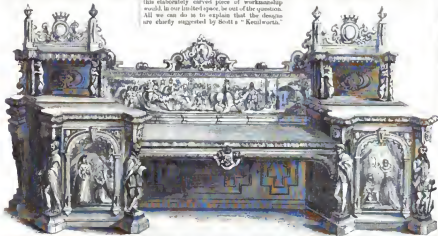
A state CARRIAGE-LAMP, by Mr. R. BLACK, of London, is richly ornamented in chased silver.



One of the most costly and admirable works of its class in the Exhibition is the Buffet,

designed and manufactured by Messrs COCKIN & BURN, of Warwick. Any attempt to describe this elaborately carved piece of workmanship would, in our limited space, be out of the question. All we can do is to explain that the designs are chiefly suggested by Scott's "Keatsworth."

It is, altogether, a work of manufacturing art, that reflects the highest credit on the producers.



THE INDUSTRY OF ALL NATIONS.

The two engravings which commence this page are from the iron foundry of M. DUCKEL, of Paris. The first is a FOUNTAIN, of large dimensions, ex-

hibiting dolphins supporting a shell, in which stands a figure, springing from aquatic plants. The other is an iron VASE, to be placed in a

garden; it stands four feet and a half high, and is richly decorated. At each end of the three angles, above the pedestal, is a winged figure.



The subject underneath is from a CLOCK-CASE, executed in terra-cotta by MESSRS. PRATT, of Burton. It is of large size, and intended for

the exterior of a building, for which its truly excellent design peculiarly adapts it. The figures, which have an antique character, and



are elegantly posed, are well modelled, and the entire composition is conceived in an artistic spirit. We should be pleased to see greater attention paid to this branch of manufacturing art, for which there is, indeed, ample room.

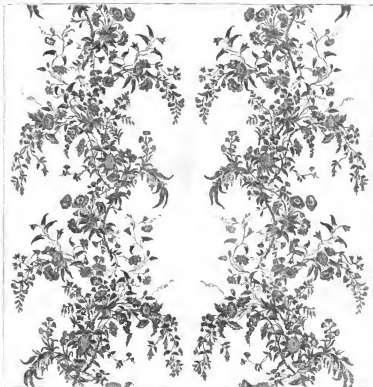


ART-JOURNAL ILLUSTRATED CATALOGUE.

A bearded silk designed and exhibited by Messrs. LEWIS & ALBERT, of London, and manufactured for them by Messrs. Campbell,

Harrison, & Lloyd, of Spitalfields. The elaborate nature of the pattern, and the unusual number of colours (fifteen) with which the silk is bro-

oded, require for its production nearly thirty thousand cards, and ninety-six shuttles. As a specimen of weaving, it is of the best order.



This page is completed by the introduction of | by Mr. J. C. BARCLAY, of Coventry. The pattern | a good adaptation of its graceful form. The
an engraving of a piece of ribbon, manufactured | is suggested by the convolvulus plant, and shows | ribbon is termed by the manufacturer a "leo



roided damask figured hosiery." It is made in | fifteen hundred cards, and it has in it three | of warp silk. We engrave it as much for the
a nine hundred Jacquard machine, employing | thousand eight hundred and sixty-eight threads | "coursure" of its manufacture, as for its design.

THE INDUSTRY OF ALL NATIONS

The productions of Mr. ASHLEY, of London, are among the most remarkable for good taste, beauty of design, and excellence of execution. We think they



would bear so comparison that may be instituted with other works of their class in the Exhibition. Our selection comprises a TINTED-GLASS, with an



open framework and handle of a highly ornamental character, in flat chased work, richly gilt. The MINIATURE GLASS beneath it is provided with a prop.



and is constructed in the lightest manner,—so as at once to be elegant and useful; the framework is fanciful in design, but it will be seen that its general character is

good and useful, and convenient for the boudoir table. The TINTED-GLASS is an equally elegant article; the entire bowl is cut from conchoidal;



cabinet, is equally sumptuous in its fittings; it is richly chased and gilt, a large malachite

the receptacle for the tape, the little figures, and the ornamental handle and foot, are chased and gilt. A JEWEL-CASE, in the form of a

decorates the lid; the doors beneath are in gilt open work, displaying slabs of the same costly



stone beneath. The LAMPSTAND is a fanciful composition; the large slab upon the top is a

pure bloodstone. The CASKET is, perhaps, the best of the series; it is formed of ebony, upon



which the richly-gilt open-work mountings have a singularly good effect, the arrangement of taste being further aided by the introduction

of coral columns. The groups of entwined serpents which cover the lid, and form the feet, are happily conceived and well executed.

ART-JOURNAL ILLUSTRATED CATALOGUE

We consider the ORNAMENTAL JEWELLERY of
Mons. C. ROUILLON & SONS, of London, suffi-

ciently important and beautiful to devote a page
to the illustration of a few of their contributions.

single or in groups, in which not only their forms
are closely followed, but sometimes successful
attempts are made to produce natural colours



ciently important and beautiful to devote a page
to the illustration of a few of their contributions.
The business of the manufacturing jeweller has
undergone a great change during the last few
years, for there is a fashion in the works of his
hands, which, perpetually changing, compels him
to seek new methods of exhibiting his taste and
skill. We may instance, as an example, the
manufacture of watch-cases, a branch of their art

single or in groups, in which not only their forms
are closely followed, but sometimes successful
attempts are made to produce natural colours

rivals as this description of art-manufacture, and,
it must be admitted, have taught our fellow-
countrymen many lessons, which they have
probably turned to account. The first subject
we introduce of Messrs. Rouillon's contributions
is a BRACELET, set with rubies, in gold, of exquisite
workmanship. The next three subjects are from
BRUGGES; the first of these is in a style which,
we believe, the French jewellers originated; the
setting of this is of gold, the large stone between



that is now rarely called into exercise; a few
years since, a gentleman was seldom seen without
two or three of these appendages glittering on
his person. And again, in such objects as ladies'
ear-rings, which are almost wholly out of date,
except as pawns on what may be termed "estate
commissions." These alterations in the style of
ornamental dress have compelled the manufac-
turer to devote his attention chiefly to bracelets,
ornaments for the hand, and brooches. The

by the introduction of precious stones; it
will, therefore, be easily conceived that great

the figures is a carbuncle, and brilliantia decorates
the drops; it is a very rich and elegant ornament.
The second brooch is composed of rubies and
brilliantia in a costly setting, while the third is
little else than a mass of diamonds, strung to-
gether in the most graceful form, in imitation of a
bouquet of flowers. The last subject is a
BRACELET. This bracelet is made up of diamonds
and amethysts; the large stone in the centre is a
carbuncle. All of these jewelled ornaments are
not only of a most costly description, but they



last-mentioned objects, though of distant origin,
have assumed a totally varied form and feature
from even their more immediate predecessors.

delicacy of workmanship, as well as considerable

exhibit taste on the part of the designer, combined
with ingenuity and skill on that of the artist's
workman of a more than ordinary character.

THE INDUSTRY OF ALL NATIONS

The two subjects commencing this page are contributed by M. FAILLARD, a bronze manufacturer of Paris. The first is a Clock of massive

design, which, however, from its being pierced or open towards the bottom, loses much of the heaviness it would otherwise present. The dial

is surmounted by a group of children playing with birds; they form a most pleasing picture. The other object is a GIRAFIOLA, corresponding in style with the clock, but the child is at the base, and the birds are perched among the branches.



American, among her consignments of manufactured objects, contributes several worthy of being introduced into our pages. The United States present a wide field for the operations of skilled

artisans in ornamental articles; as their wealth increases, so do also their taste for the elegant and the beautiful, and their desire to possess what will minister to the refinements of life. Thus

is ever the case with nations, as they advance in intellectual power, and in the just appreciation of what confers real dignity on a people; and their moral strength keeps pace with their pro-



gress in intelligence. The PIANO-FORTE here introduced is designed and manufactured by

MONTE, NICH & CLARK, of New York. It is richly carved in rosewood, and the execution

of the work is creditable to the skill and ingenuity of the workmen who have produced it.

ART-JOURNAL ILLUSTRATED CATALOGUE

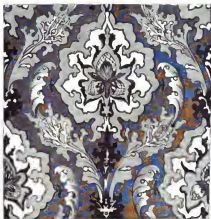
Messrs. WOODLAND, of London, exhibit a great variety of new and beautiful designs in paper hangings, a branch of the industrial arts which has received much improvement during the last quarter of a century in England; perhaps we may safely assert that there is scarcely any one trade in which greater progress is visible. The

and very deservedly, inasmuch as the character of each style, and the taste of each age, have been studied, and its most characteristic features

applied with success to the adornment of our walls. The series upon the present page are good examples of this fact, and exhibit much



reputation for good design and tasteful colouring which the continental house almost monopolised, is now constantly shared by the home producer.



variety of style; the elongated panel, is a free translation of the best Italian period, when a Raffaele did not disdain to devote his transcendent genius to the walls of a Loggia, and produce a style which has never been surpassed,

and all the changes of fashion. The gorgeous taste of Persia has furnished the theme of the second of our series, the fanciful and brilliant hues of which are, of course, but to be guessed at without the aid of colour; the same remark



must apply to our third example, in which the style of the decoration adopted is that far-famed building—the Alhambra—has been chosen, and

re-produced with great success, and at a cost which enables the moderately wealthy to rival the dearly-purchased luxuries of the East.

ART-JOURNAL ILLUSTRATED CATALOGUE.

The engravings on this page are from *CARPETS* contributed by Messrs. TOWNSEND, BARN, & Co., of London. It is very difficult to form

anything like a correct notion of the richness and beauty of these fabrics, when the colours are represented only by graduated shades of black,

but the patterns, however delineated, speak for themselves. In the first, we have only the fern-plant, one of the most graceful productions of



the woods and hedgerows, and, as seen, worked out in this carpet in shades of the liveliest green, nothing can be more ornamental. For the second

pattern, the flower-garden seems to have been rilled of its gayest and choicest flowers, to furnish the designer with materials for his work, so much

that it almost requires one well instructed in botany to make out a list of its contents; and yet there is nothing overdone, nor any absence



of the most elegant harmony. Therein lies the skill of the designer in bringing all his selections into one mass of beautiful coloring without

offending the purest taste. We think it will be generally conceded that our best carpet-manufacturers have not come into the field of com-

petition without being fully prepared for the contest. The carpets engraved on this page were designed for Messrs. Smith by Mr. E. T. Parry.

THE INDUSTRY OF ALL NATIONS.

Messrs. H. WILKINSON & Co., of Sheffield, exhibit the CENTRE-PIECE we here engrave; it is a clever

combination of figures and foliage, standing on a pedestal of enriched character. The branches

We have, on this, found occasion, in our pages, to recommend to favourable notice the beautiful



for candles bend forward from the main stem, with an easy lightness, and the glass dish in the



centre is of good form. "The Ionic fragment," in the Herculaneum style, is a simple but graceful

necessary for the library table. The manufacturers uphold the high reputation they have acquired.



"ILLUMINATED GLASS" of Mr. KIDD; that term has not been lightly used by him in its design.



tion. The most brilliant effects are produced by the ornaments being cut on the under side.



and filled with silvering, giving them the effect of embossing. Many of the forms are good.

ART-JOURNAL ILLUSTRATED CATALOGUE

CHINA—"the central flowery Nation"—is



represented through the contributions of various



persons, chiefly European. By far the most

important portions of the collection are sent by Messrs. HENRY & Co., of Vauxhall Street, and comprise a large quantity of articles remarkable for their value and beauty. The IVORY BASKET which we engrave is an elegant example of taste,

combined with the patience and care for which the Chinese workmen are celebrated. The LACED-UP GLASS, on its carved stand, has more freedom of design than we find in works coming from China, where mathematical precision in thought



and action predominates. With a little more ease in the flow of its lines it might be made an elegant and desirable addition to the boudoir of the European belle, reflecting the fair face as

pleasantly as it now reflects the Crystal Palace. The other articles on our page are contributed by Mrs. CHARLOTTE RAWSON: the upper one is an elegant CUT cut in soap-stone, upon a foliated



stand of ebony; it is used as a medicine-cup. The entire design has much freedom and fancy, combined with the peculiar taste of the Japanese and the nature of the foliage. Beneath is a Japanese sweetmeat box on wheels; it is con-

structed of a red lacquered ware; the boxes being formed to fit into each other in a variety of shapes. The arabic taste of a peculiar nation, schooled into a certain precise tone of taste, is strikingly visible in all these works.

THE INDUSTRY OF ALL NATIONS

The manufactory of Messrs. Richardson, at Stourbridge, is chiefly famous for its productions in CRYSTAL GLASS, which they have carried to the utmost extent of brilliancy and purity. An examination of their contributions in decanters, wine-glasses, goblets, cream bowls, butter-coolers, &c., will at once carry conviction that in this branch of the art England excels every other country of the world. Bohemia asserts, and probably maintains, its supremacy in the manufacture of coloured glass, but it cannot enter into competition with us as regards that which is colourless.



We are rapidly gaining upon them on their own ground, and it will be seen, by comparison, that



of late years, we have so far studied forms and ornamentation as to have already far surpassed

them in these most essential matters. There is one point which, in justice to Messrs. Richardson, we must not omit to notice: all the articles they have sent to the Exhibition are produced

by British workmen; so that whatever merit they possess, and it is unquestionably great, is



due to the taste and talent of our own countrymen: the principal designer and engraver is



other candle-lamps exhibited by Messrs. Brierley & Son, of Birmingham, which are exceedingly

shely establishment is Mr. W. J. Munkley. Among the objects emanating from this factory



seen in the Exhibition, and forming portions of



the contributions of other manufacturers, are the glass pillars and domes to the bronze and



ART-JOURNAL ILLUSTRATED CATALOGUE

novel in style and rich in colour; of these we shall



engrave specimens. The two DECANTERS with which we commence our illustrations, are of the purest crystal; the lozenge-shaped cuttings bring out the prismatic colours with exceeding brilliancy; the GORLET at the head of the second column is elegant in form, and the introduction of the vine upon the cup,

of the cutting, while it retains all its boldness. The next subject is a BOTTLE DUM of crystal.



designed after the style of the antique. The VASE that follows is very elegant; it is man-

enamel colours. The DECANTER completing



that page is most lustrous, and the lozenge-shaped cutting exceedingly bold. All the objects introduced in this page are of crystal of the purest kind; the beauty and variety of the cutting in the



though not a novelty, is appropriate. The FACET DUM and BRACK that follows is of ruby glass covered on flint, and then cut through, showing the two colours to great advantage. The WINE GLASS is very elaborately ornamented, and the stem, which looks a little heavy in the engraving, loses this appearance in the original object, by the style

featured in opal; the meril and band at top and bottom are gilt; the flowers and fruit painted with vivid

whole of these works cannot fail to secure to them unqualified admiration. The large group at the bottom consists of one of each articles in a set of glass for domestic purposes, consequently they are all of a similar pattern, except the CLARIFIER, which is cut in a similar style, but is somewhat varied in its decoration.



THE INDUSTRY OF ALL NATIONS.

Messrs. LAMBERT & RAWLINSON, of London, exhibit a variety of objects in the precious metals, adapted for useful and decorative pur-

they are richly chased and partly gilt, their style is antique, and they are hammered out of the

plate. The next illustration is from a Salt Cellar, the model of which is a Pegasus, or



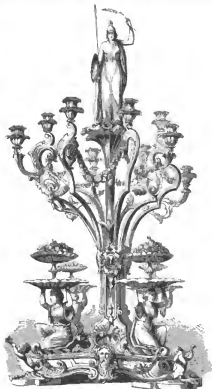
poses: such as wine flasks and stands, ruby glass cups with silver mountings, designed after the antique, all characterized by a taste ac-



quired by long years of experience. We have selected from their contributions a pair of massive Wine Flasks, each standing twenty-two inches high, and holding eleven quarts.



quipped horse; and this is followed by an elaborately chased silver twelve-light Candelabrum and FOUNTAIN CENTRE combined; its height is four feet, and its weight nearly twelve hundred



source; the design is appropriate to the Great Exhibition—Britannia, with the olivebranch of

peace, is welcoming the representations of the four quarters of the earth, heralded by Tritons.

ART-JOURNAL ILLUSTRATED CATALOGUE.

The ornamental **FRONT** for a window is the manufacture of **MR. K. BROWN**, of London, who

conducts an extensive business of this description; one of considerable importance, as con-

sisted with domestic furniture, and in which he has ample room for the display of good taste.



The ornamental engraving is from a **CURTAIN** by **M. DAVIN**, of Paris; it is a beautifully decorated piece of workmanship. The handle is of carved ivory, the left of polished

A **CLOCK**, manufactured by **MR. J. WALKER**, of London, merits high commendation, from the truly elegant and artistic character of the design. The case is electroplated; the pedestal, of

variegated blue glass, is surrounded by a group of figures, representing *Britannia*, in the robes of peace, directing attention to the progress made by Time and Science in the civilization and



steel, chased, and the scabbard of dark steel ornaments on a grey ground. There are many elegant objects of this description by the French exhibitors, equally meritorious in character.



happiness of the people of Great Britain; this is illustrated by a series of seven subjects, revolving, by the aid of machinery, in the face of the

clock. The several parts of this work might be described at length, altogether, there are few more meritorious productions in the Exhibition.

THE INDUSTRY OF ALL NATIONS.

Birmingham has recently made great progress in the production of the better sort of plated

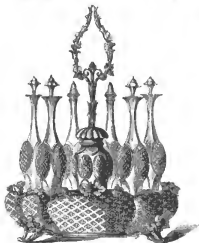
and silver manufactures, so much so, indeed, as to have become a formidable rival to Sheffield,

a town whose supremacy in this department of business was, till now, undisputed; however,



There is ample room for the manufactures of both these important places to display their ingenuity and skill to the best advantage, and so contented for the pains of criticism. We engrave on this page some of the works contributed by the establishment of Messrs. PATER & SONS, of Birmingham. The first subject represents a BUTTER-KNIFE; the handle is in the Italian

the industrial arts, are in nothing more manifest than when seen in



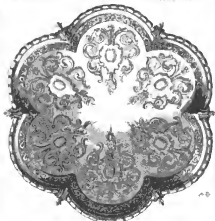
style, and the blade is ornamented with an open serrated pattern. The LIQUOR STAND that follows offers considerable novelty in its design, which shows the utmost liberality in the ornamentation of its several component parts. To this succeeds a CUP-BURST, the form of which is decidedly good, and the chasing in excellent taste. The TOAST RACK shows also a



artistic manufactures. The various processes of electrotyping, magne-



very meritorious design, and the TRAY underneath it is equally entitled to commendation. Lastly, the ALFABETIC TOWER, which completes the page, are sufficiently enriched with ornament to render them an elegant appendage to the dinner table. We believe that all these manufactures are executed in magento-plated silver. The results of scientific research, when applied to



plating, and others, have greatly tended to produce this satisfactory result.



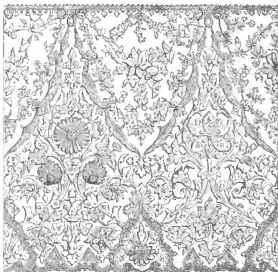
ART-JOURNAL ILLUSTRATED CATALOGUE

Messrs. HERRY, ALLEN & Co., of London, among other examples of FINEST MANNING, exhibit the panelling, a portion of which we engrave. A richly-composed group of flowers and foliage runs round the entire design, which is executed with much care and precision, and exhibits considerable taste in the arrangement of colours. Floral decoration is exceedingly well applied to works



of this class, and when carefully studied, and truthfully rendered, is more gratifying to the eye than any other style of border ornament.

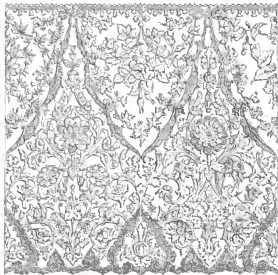
In our report of the recent exhibition of the works from the Government Schools of Design, at Marlborough House, published in the April



for the British manufacturer to call in foreign aid. This was vividly exemplified in the instance

number of the *Art-Journal*, we noticed the important fact of the utility of such schools for artistic education, which rendered it unnecessary

of Mrs. TREADWELL, of Exeter, an eminent lace manufacturer, who had prepared for a continental



journey to procure designs. Fortunately, she first visited Somerset House, when the design for a LACE FLOURISH was made the subject of a con-

petition among the students. The successful design was by Mr. C. P. Stomonds, which has since been worked out, and is here engraved.

THE INDUSTRY OF ALL NATIONS.

The two BAROMETERS occupying this column are manufactured by Messrs. GRAY & KNEE, of Liverpool. The cases are made of English

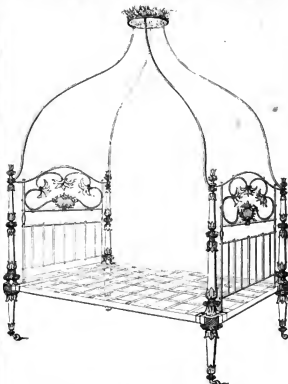


walnut wood. The first is of Gothic form, and has an elaborated dial plate, in which the architecture of the forest style is represented. The



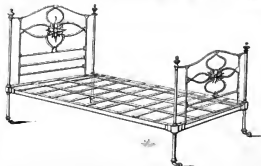
second was designed for the "Bailors' House," in Liverpool; it is a facsimile of a patent anchor, the flukes of which support the ornamental dial.

The two IRON BEDSTEPS, introduced on this page, are from the establishment of Messrs. FRYTON & HARLOW, of Birmingham and London,



besides where we would, possibly, least expect to find them. The great points which should be aimed at in the manufacture of these bedsteads are lightness and elegance, in almost direct

opposition to those of French make, where solidity is chiefly required. This variation arises from the difference of construction in the two styles, and the adoption of hangings, or



curtains, with us, which our continental neighbours seldom or never use. The productions of

Messrs. Fryton & Harlow are most excellent of their kind, and excellent examples of metal work.

In the course of our continental tour last year, undertaken for the purpose of ascertaining what preparations were making there for this



year's Great Exhibition, we visited the extensive establishment of M. CAFFELMANS, at Brussels, in the course of our report, made an inci-



dental mention of his varied and important manufactory, which is devoted not only to con-



crete earthenware and pottery, but to porcelain of a better kind, and to glass work, in plain



shells, or in "marbre figuré" rivaling in beauty the ancient Venetian works. Among the

concrete pottery we discovered imitations of our old friend, the much-patronized and much-popular English form, and, among the plain, showed "willow pattern." The present page is



filled with examples of the CHINA and EARTHENWARE contributed by M. Caffelmans. The large Vase is of very fanciful design, exhibiting much of the peculiar and somewhat whimsical taste which



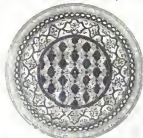
characterized the pottery of the Low Countries two centuries since. The Faïence as the foot of the page, with its supporting angels, is a very fanciful and elegant work of its class.

ART-JOURNAL ILLUSTRATED CATALOGUE.

A Vase, or fruit-cup, manufactured and exhibited by Messrs. J. WAGNER & Son, distinguished artists of Berlin, is an exquisite example of metallic sculpture. The various figures are admirably modelled, and the ornamentation is altogether in the best taste. It is executed in chased silver.



The circular engraving which appears underneath is from a Table-top, forming a portion of



the costly and attractive contributions from the Austrian dominions. The table is manufactured by M. KANT LAUBNER, of Vienna; it is inlaid with various woods, arranged in a novel pattern.

The piece of Silk represented in the annexed engraving is manufactured and exhibited by Messrs. STONE & KEAR, of Spitalfields, who are noted for associating art with their productions. There is evidence of this in the design before us, which, we believe, emanated from the School of Design in the locality referred to. It is satisfactory to find manufacturers avail themselves of the assistance of such institutions.



From among the variety of objects monochrome and exhibited by B. SCHUMMER, of Darmstadt.



made, we have selected a FARM WAGON, which represents a boar-hunt, placed not very appropriately, but yet ornamentally, upon a base designed like a foot-stool in a novel frame-work.

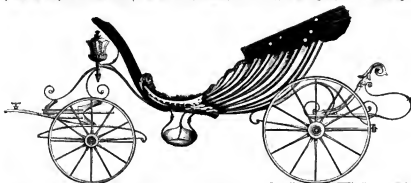
primarily, but yet ornamentally, upon a base designed like a foot-stool in a novel frame-work.

THE INDUSTRY OF ALL NATIONS.

The English carriage-builder still maintains, in his various contributions to the Exhibition, the high position universally accorded to him in this

branch of industrial art. We suggest how a more elegant *Passe-Porteur*, manufactured by Messrs. HALLMARK, ALDERTON, & HALLMARK,

of London. The body of the carriage has a form similar to that of the moustion stool; and the vehicle, altogether, is remarkable for its lightness.



The two *Swords* on this column are the manufacture of Messrs. HENRY, GREAVES, & Co., of Birmingham. The longer one is an officer's *FIELD*

The *BOOK COVERS* of Madame GIGUEL, of Paris, are so truly artistic in design and execution, that

we feel no apology need be offered for introducing another of them into our pages. Thus, like



Sword, the hilt and mounting of the scabbard are richly chased and gilt. The other is a Highland *CLASP*, of good, yet elaborate, workmanship.



the preceding is carved either in ivory or box-wood. The centre of the design shows the Virgin

crowned; the surrounding ornamentation exhibits a kind of trellis-work, partially covered.

ART-JOURNAL ILLUSTRATED CATALOGUE

Messrs. TOWLER, CHURCH & Co. of Norwich exhibit some of the exquisite textile fabrics which have given character and reputation to

this ancient city. A magnificent flower scarf with a silk ground, is one of their contributions. It measures four yards in length, and two in

width. The sobriety of colour which prevails in these elaborate productions is a proof of the good taste of the manufacturers. We engrave



the centre of one of the SHAWLS, which is but a small portion of the whole, the entire pattern being of the most intricate design, which it would

be utterly impossible, adequately, to represent in our pages; it is like exhibiting a leaf from a tree,—but, as that is enough for a botanist to

determine its character, so our cut may be received as an assurance of the taste which characterises these beautiful articles of female dress.



The group, in marble, of VENUS and CUPID, is by Mr. E. DAVIS, of London. The subject is one that has engaged the sculptor and painter of almost every age, so that it seems impossible to present it with any sentiment or action

approaching to novelty. Mr. Davis has represented Cupid interesting with his mother for his bow, which Venus appears unwilling to place in his hands. The two figures are exceedingly well modelled, and arranged with much grace.



The Candelabrum, to hold four lights, is exhibited by Mr. G. BROWNE, of London, an extensive manufacturer of composition articles. It stands eight feet high, and is manufactured in wood and marble-pierre, gilded to imitate or emulate.

THE INDUSTRY OF ALL NATIONS

America having been noted for the luxuriant
curves of its chairs, which combine in them-
selves all the means of gratification a Sybarite
could wish. The AMERICAN CHAIR COMPANY, of
New York, exhibit some novelties, which even



increase the luxury and convenience of this
necessary article of furniture; instead of the
ordinary legs conjoined to each angle of the seat,
they combine to support a stem, as in ordinary



music-stools, between which and the seat the
spring is inserted, this we exhibit in our first
cut. It will allow of the greatest weight and
freest motion on all sides; the seat is also made



to revolve on its axis. The design and fittings
of these chairs are equally good and elegant,
and certainly we have never tested a more easy
and comfortable article of household furniture.

The TABLE COVER engraved below is exhibited by M. Clerget. It is worked in wool and silk
by Mlle. HERSON & Co., of Paris, from a design of various rich colours and shades, well selected,



M. Berouze, of Paris, a most extensive
manufacturer of clocks and watches, exhibits a
superb Clock, which is the subject of the



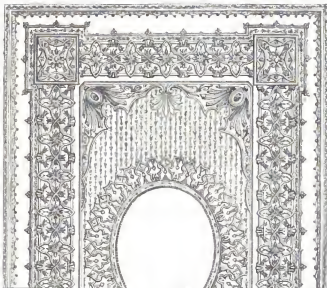
beyond mere ornament, they are pointing up-
wards to indicate the flight of time. The upper
part of the clock shows much elegance and able-
ness decoration arranged in unquestionable taste.

ART-JOURNAL ILLUSTRATED CATALOGUE

The first engraving on this page is from the
COVER OF A BIBLE, bound and exhibited by

Mr. A. TARRANT, of London. It is an elaborate
specimen of the art of bookbinding; the orna-

ment is beautiful in design, skilfully worked out,
and is highly suggestive for other purposes.



The CARPET is from the manufactory of Messrs.
TAMPLING & Co., of Ulm, of whose contri-

butions we have given examples in a former page
of our Catalogue. We have never seen any fabric
of this description richer and more elegant than
this; the pattern is full of "subject," displayed

with exceeding taste and judgment;—groups and
wreaths of flowers, scrolls, and border ornaments,
possessing a combination of beautiful forms.



THE INDUSTRY OF ALL NATIONS.

Messrs. SIMCOX & PERRINGTON, of Birmingham, contribute many admirable specimens of the variety of useful articles which go towards the



fitting of a house, and which, until of late years, were considered beneath the thought of the artistic designer. The CURTAIN RING is an excellent sample of the applicability of floral nature



to ornamental art; the BELL-PULL, which moreover, may be also traced to the more fertile source of decoration, as modified by the particular taste of the architect. An EMBROIDERED CURTAIN RING succeeds, and shows how well the character of

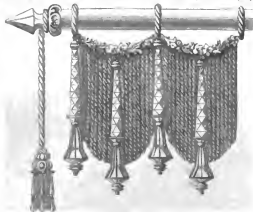
internal decoration of any period may now be carried out in all minor accessories. The DOOR HANDLE is of much lightness and elegance; and



the CORNICE and CURTAIN ORNAMENTS present an attractive novelty of form. They are all



highly favourable examples of manufacturing art, applied to the exigencies of every day life.



M. GILLES, of Paris, contributes the porcelain works engraved in our present column, which



are remarkable for novelty and taste. The handle



of the JEN is ingeniously formed of a lined.



The TOLLEY BOTTLE is in the elegant taste of the East. The VASE is that of the old Venetian.

ART-JOURNAL ILLUSTRATED CATALOGUE.

The two objects which occupy this column are from the contributions of M. LA ROCHE, of Paris, who is eminent for the taste he invariably displays in the manufacture of porcelain.

clocks, and what are termed articles of vertu. Indeed, it may be said that his reputation in these departments of manufacturing art is second to none in the French metropolis. The first of



our selections is a very elegant Clock, which appears in a vase-like form. The figures are designed with much grace and playfulness of action; the pediment is tastefully decorated with flowers, and the vase, of dark blue porcelain, equals the finest Dresden. The Wine



COOLER, of light blue porcelain, is another work of great artistic beauty. We cannot speak too highly of the productions of this manufacturer.

We are well acquainted with his establishment in Paris, which is full of admirable works, arranged for show in the most attractive manner.

The National Manufactory established at Beauvais is represented by a series of works in tapestry for chairs, sofas, screens, and carpets. The extreme beauty of these productions is worthy of attention, particularly the skilful arrangement of colour they present, which,



though vivid, is so exquisitely toned as to be most grateful to the eye. The woodwork of the furniture is by M. DEVAI, one of the most famed of the Paris upholsterers, and who is specially appointed to mount all the tapestries issued from the National Manufactory, as well as to



superintend other government work. The ornamentation he has executed with much perfection of finish, combining boldness of form with delicacy of handling, the whole being characterised by good taste. We select a CHAIR and a SCREEN as examples of these national works.

THE INDUSTRY OF ALL NATIONS.

The manufactures in PAPER-MACHÉ, of MONTMARTRE.



M. C. LACROIX & HODGKINSON, of Birmingham, deservedly



stand in high repute. Their productions in the

light and elegant material are characterised by excellent design and great richness in the variety

of colours introduced. We engrave on this page a number of these useful and ornamental objects,



which it is unnecessary to particularise, as they sufficiently explain their own application. The

TABLE is especially unique in its ornament, and the CASSONET is most elaborately decorated. There



is no question that England stands unrivalled in this branch of industrial art, and her manufac-



turers seem determined to maintain their superiority, if energy and perseverance can effect it.

ART-JOURNAL ILLUSTRATED CATALOGUE

The white terra-cotta productions introduced on this column are by Mr. BLANCHARD, of Lambeth. The first is a Vase and Pedestal, highly ornamented,



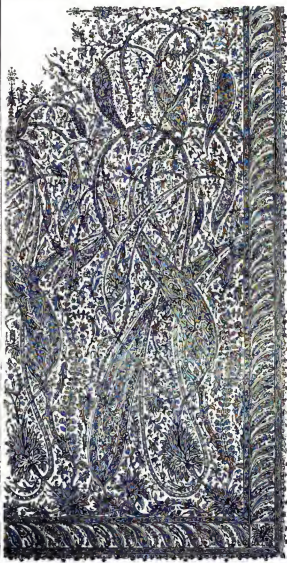
and executed with a sharpness and clearness equal to the sculptured stone. The second is a Vase, less decorated than the preceding, but equally



drawing of favourable notice. We should be glad to see this beautiful material brought into more general application, for which it is well adapted.

A most successful attempt to imitate the style and effect of the real Cashmere shawls may be seen in the following engraving from a

SHAWL, designed by Messrs. LEWIS & ALLENBY, of London, and printed for those by Messrs. Swanwick, of Crayford. The design is of the



most elaborate character, and size at producing, on the lighter fabrics, suitable for summer wear, the qualities which have hitherto been

found only in the more weighty and costly manufactures of the Asiatic producer. The shawl exhibits much rich harmony of colour.

THE INDUSTRY OF ALL NATIONS.

If we desired to convince a foreigner of the immense wealth which this country possesses in the shape of manufactured articles, we would



invite him to accompany us for a day's stroll through the leading thoroughfares of our vast metropolis, to inspect the contents of the same



our establishments for the manufacture and sale of works in the precious metals; or, what would be as effectual and cost less time and labour, we would take him to the south-west gallery of the Great Exhibition edifice, to point

out the riches that England contains within



her, as it is the amount of skill and labour



which are brought to bear on the production of

articles of luxury alone, and which must necessarily increase their value tenfold. Then, the stranger would be led to reflect that, where so



much capital is expended on the production, there must be still larger means at the disposal of the buyers to call for such an outlay; consequently, the ideas of our wealth receive a two



fold impression. Among the mass of contrivances that make up the costly piles to which altitudes have been made, the silver ornaments and the jewellery manufactured by Messrs. S. R. & D. Glass, of London, must, from their



out to him the profusion of wealth congregated there in glittering heaps, almost, if not quite, realising the dreams of eastern fable. But it is not so much the value of the mere metal to which importance should be attached, as the

magnitude and beauty, attract observation. The most important of these is a Silver Flower Service of novel character and design, modelled from plants growing in the Royal Gardens at Kew; of this service, five of the objects are ex-

ART-JOURNAL ILLUSTRATED CATALOGUE.

graved on the preceding page, and two on this column. It is quite needless to expatiate upon the taste displayed in the adaptation of these natural forms to manufacturing art. On the second column of the preceding page we have also introduced a jeweled Baccarat, in the style of the cinque-cento period; this object requires



close examination as one can appreciate the beauty of its design. At the bottom of the vase page is a Baccarat set with diamonds and cut-glass, with portraits of the Queen and the Prince of Wales, after Thorburn, A.R.A., and executed in gold, engraved by J. J. Crew. A



CHRISTENSEN CUP, embellished with angles keeping watch over a kneeling child, designed by R. Redgrave, R.A., completes our illustration of the contributions of Messrs. Goss; but we may hereafter find occasion to pay their stand another visit, as we observed among their pro-



ductions several objects deserving of notice: a silver gossamer shell bracelet, designed by D. Macdonald, R.A.; a mirrored and jeweled desert set, in the Egyptian style; numerous articles of jewellery, of various kinds and in diversified style; and a large vase, most ingeniously composed of human hair, executed by J. Woolley.

Messrs. COWLEY & JAMES, of Walsall, exhibit the brass CHANDELIER here engraved, and which consists of fixed ornament, of a light and graceful character, well calculated to relieve from weighty monotony, an article which, in the



or even weightiness of appearance, a very objectionable quality, whenever exhibited. In some instances, the style or character of the apartment for which they are intended may demand a certain "weight," but the prevailing idea to guide the

hands of a tasteful designer, may be made an elegant adjunct to the drawing-room. However elaborate or beautiful the design and execution of such articles of modern furniture may be, we must confess that we think less of construction,

artist should be the construction of a receptacle for light, which, like that element, should be ethereal, and graceful, and ponderosity be especially eschewed. The Baccarat, by the same manufacturer, has the quality of lightness in a



remarkable degree, the design and ornamentation being of the simplest kind; and, we must say, we prefer it to much of the over-elaborate and highly-elaborated articles, which we are not infrequently called upon to notice. We are

convinced, from long experience, that it is far easier to produce such works, than to confine decoration to that which is simple and appropriate; the former may be done by the ornamentist, the latter only by the artist of taste.

THE INDUSTRY OF ALL NATIONS.

The two CHAIRS and the large SIDEBOARD which appear on this page are the work of Messrs. HICKES, of London. The chairs are of very elegant design, and are beautifully carved; they are, however, so remarkable for their comfort as for their elegance, and present all that is requisite for the beauty of the room of the drawing-



room. The sideboard is carved in a bold and massive style, entirely from the wood of the walnut tree, which has been chosen by the manufacturer to show the capability of English

wood for decorative purposes. The embellishments of this large and important work are all indicative of its use; the laden branches of the vine encircle it, from between which peep the

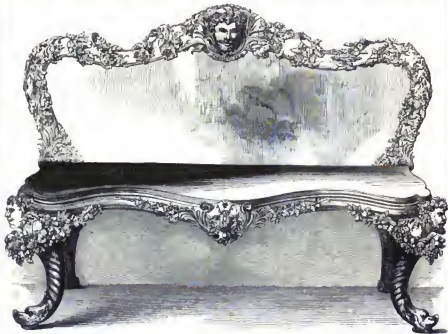


heads of bacchante; and the cornucopia, filled to overflowing with the plentiful fruits of the earth, give large promise of abundance. It is, altogether, a well-conceived production.

The Vase in the centre is a foreign contribution; it is one of the valuable productions of Russia. It is entirely constructed of Jasper, and though good in form, its great recommendation is its large value. The wealth of the Russian mines and quarries has long been a celebrated feature of the country; and the contributions it



has sent us testify abundantly to the truth of "braveller's tales" connected therewith. We purpose engraving, in a future number, other subjects worthy of notice from this vast empire.



ART-JOURNAL ILLUSTRATED CATALOGUE

It is rather surprising that the English manufacture of carpets stood still within the last few years, so as far behind its foreign competitor as, it must be acknowledged, he has been, seeing

that the use of these fabrics is so much more general here than elsewhere; and it is an axiom among the leading community, that not only the supply of an article should keep pace with

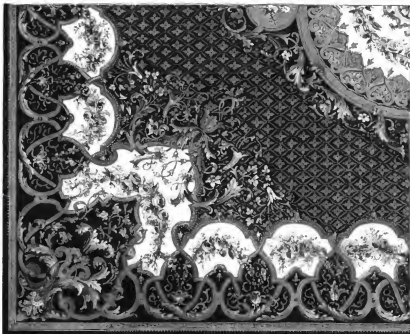
the demand, but also that a stimulus should be given to the demand by every kind of improvement of which the object is capable. Now there is scarcely an article of ordinary



domestic use better calculated to develop the artistic resources of the manufacturer's mind than those to which we are now referring, whether they are intended for the dwellings of

the middle classes, or the mansions of the wealthy, and, in consequence, we have latterly noticed they exhibit a far greater degree of refinement and taste than we were wont to see

shown in this. Among the contributors of carpets of various degrees of quality, some rich, and others suited to more common purposes, are Messrs. A. LAFWORTH & Co., of London,



from whose contributions we have made some selections. The first engraving represents an elegant HEAVEN HILL, designed for Messrs. Lafworth by Miss Gann, a clever pupil of the School

of Design at Somerset House. The design is simple, but very elegant, being nothing more than wreaths of white and red roses, upon a dark, chamois coloured ground; in the border, a

white ribbon is entwined with them. The other subject is from a rich Axminster CARPET; the borders, corners, and center of this are exceedingly fanciful, but they manifest much beauty.

THE INDUSTRY OF ALL NATIONS

The palm of excellence in gold and silver ornamental works has hitherto almost universally been conceded to the manufacturers of France; but those who have attentively examined British works of this class, and among others, the productions of Mr. J. Assens, of London, will be inclined to qualify their admiration of the contributions of foreign rivals; this, too, with

reasons that either multiplies the labours of man's ingenuity, or dispenses them throughout the world, is a witness to the fact. Capital, taste, and skill have been liberally expended to bring about such improvement. The application of the Fine Arts to manufacture has made rapid strides within the last few years; science has kept pace with them, developing new

resources of colour and material to realise every new artistic conception of beauty and elegance. The manufacturers have bestowed themselves carefully; in earthenware, porcelain, glass, iron, and metal work generally, and in the textile fabrics, the progress has been marked and rapid; and what is of still greater importance, the labours of the producer have been not by



out any disparagement of their merits. If we had no other examples in the Exhibition whereby to prove the immense progress made in this department of industrial art we could confidently appeal to those works as evidence of our advance. The present is unquestionably the age of improvement as well as of invention, and every object of ornamental or useful application, from the toy with which childhood amuses itself, to the gigantic steam

the appreciation of the public house have arisen renewed efforts in the part of the former to carry still further his improvements, and to invite the patronage of the latter. But we must not exhaust our space with preliminary remarks, to the exclusion of a description of Mr. Assens's beautiful productions. Among the objects for which we could not find room are several groups,

and silvers in silver and silver gilt, richly wrought, and finely designed; the subjects we have specially noticed as worthy of being recorded are—"The Battle of Alexander and Darius," on a chased shield; "The Labours of Hercules," on a silver group of "Sir Roger de Coverley and the Gipsies," and "Arab Merchants Halting in the Desert." Our selection has been chiefly from works of fine magnitude, but not of less value as works of high art. The first is a SILVER CUP, ornamented in force, and richly embellished with bas-relief pictures; the base exhibits an elegant variety. By the side of this is a CARR SAABER, of silver gilt; the border is executed work, as are also the cross



ART-JOURNAL ILLUSTRATED CATALOGUE

ments between the indicated parts. The Chaser



at the bottom of the page is composed of some



very splendid objects; the large cup to the left



is in gold and enamel; it stands a considerable height, and is most exquisite in its elaborate and delicate workmanship; the centre piece is

one of a set of four table ornaments, intended by their designs to represent the four seasons. The large Vase to the right and silver enamelled,



it is a truly beautiful example of the chaser's skill. The smaller objects in the group are scarcely less worthy of favourable remark. On this page we first introduce a SILVER JUG, of a

stated pattern, graceful in its proportions; this is followed by another in gold, of Etruscan form, a present to Dr. Filiberto from one of his patients, and the third in the same column.



named the "VINTAGE JUG," is of gold, with the ornaments in silver; the combination of the two metals, one lacinated and the other "matted," produces a brilliant effect. The first

TEA AND COFFEE SERVICE is of silver-plate and enamelled in the richest style; the Chaser underneath it is composed of various objects in silver, glass and silver, and silver enamelled.



and the last TEA AND COFFEE SERVICE is of silver, set with enamels. While advertising to the taste which has produced the whole of the objects we have engraved, we are bound to

notice especially the beauty of the enamelling, which we scarcely remember to have seen equalled. The difficulty of enamelling upon silver is, we are assured, not easily surmounted.

THE INDUSTRY OF ALL NATIONS

We introduce on this column the CAPITAL OF a Pillar, and a Frieze, manufactured by Mr. BLANCHARD, of Lambeth. They are executed in white terra cotta. The former, though ex-



hibiting no originality in design, is wrought with a sharpness and delicacy, so it cuts from the solid stone. The latter is one of the largest architectural ornaments hitherto made in this material.



The CANON is one of the contributions from Canada. It is made of the bark of a tree, and is exceedingly light in its construction. There is, likewise, in this department of the Exhibition

Messrs. SWEE & SON, of London, exhibit the CANOPY BEDSTEAD, of which an engraving appears below. It is manufactured of mahogany,



gent article of domestic furniture, but the manufacturers have not aimed at producing an elaborate work of industrial art. The CANOPY

that succeeds is also from the same establishment. It is inlaid with very beautiful rose-quiné; the sides have plate-glass inserted.



another canoe, much larger in size, capable of holding twenty men. It was brought, through lakes and rivers, twelve hundred miles, to be shipped for England. As we observed in a former page, with reference to the contributions from

Canada, there are few having any pretensions to ornamental work; utility, rather than display, being the object of the original manufacturer. The canoe is an example of active ingenuity.



ART-JOURNAL ILLUSTRATED CATALOGUE

This engraving represents the centre of a Danish Tapis-Crois, designed by Joseph Blain, pupil of the Government School of Design in Belfast, and manufactured by Messrs. CORRY, BRADY, & CO., of the same town, on the new system of steam-beam weaving, which is, we

believe, the first successful effort made to manufacture fine damask by steam power. There is also a novelty in the purpose of the design

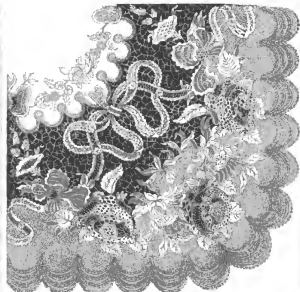
here introduced, which admits of some explanation; each group being figurative and expressive of an object according to the language of flowers. Our space will not permit us to go into the details of the matter, which we must leave to the reader's ingenuity to decipher.



The two subjects occupying the lower half of this page are exhibited by Messrs. H. SAMPSON & SONS, of London; the first is a CAVENDISH, or LADY'S CARP, of embroidered needlework, most

beautiful and elaborate in its pattern, and worked with great delicacy and finish. The other engraving is from a French embroidery MANUFACTURE that exhibits an equal amount of taste in

its design, and of superior execution; it also displays every known description of stitch in this kind of embroidery. It would almost seem that ingenuity and patient industry could go so far in such matters than have been expended on these textile fabrics, which must have occupied



so inconsiderable time in their production. Hitherto the foreign manufacturer has held

almost the entire command of the English markets; but the contests of the south eastern

gallery of the Exhibition shows much in so way inferior to the best fabrics of the continent.

THE INDUSTRY OF ALL NATIONS

The VASE OF FLOWERS is a well-executed specimen of wood-carving, by Mr. FERRY, of Toulon. The contents of the vase, so to speak, is a bunch of roses only, but the vase itself is ornamented with an allegorical composition, in which the artist's idea has been to show the preferable effects of the Great Exhibition upon the whole world. In this Mr. Ferry has evinced considerable ingenuity, but it would far exceed the limits of our space to enter upon any lengthened descriptive explanation. The design



upon the stand is a circle of flowers and plants, emblematical of various countries of the globe. We think the artist's intention in his allegorical design would have told better, if done on a larger scale; it is too full of subject for its size.

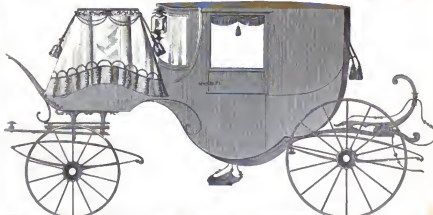
On this and the two succeeding pages we engrave some beautiful specimens of DUTCH TABLE LIPES, from the extensive and far famed manufactory of Mr. M. ANDREWS, Arleyen,



ment of the Growth of Flax in Ireland. Both the VASES and TABLE LIPES bear appropriate designs and ornaments; the former contains the arms of the Lord Lieutenant, encircled by a

Belted. The first two examples are styled the "Clarendon Pattern," having been made for presentation to the Earl of Clarendon by the Royal Society for the Protection and Improve-

ment of the Order of the Garter, in a garland of the rose, shamrock, and thistle, with other devices.



That our American friends, with all their apparent dislike of pomp and parade, are not

insensible to the luxuries and conveniences of life, is evident from the elegant CARRIAGES they

exhibit. The one engraved is manufactured and exhibited by Messrs. CLAPP & SON, of Boston.

ART-JOURNAL ILLUSTRATED CATALOGUE

We introduce on this column another of the contributions from Canada, an elegantly-built

and tastefully ornamented single SLEIGH, built by Messrs. McLEAN & WAUGH, of Montreal.



The engraving underneath is from the "Carven" described on the preceding page. It is an adon "DANISH TABLE CLOTH, by Mr. ANDERSEN, admirable specimen of his art-manufacture.



On this column are STATUETTES, executed in statuary porcelain, at the works of Mr. CORLAIR.



from models by Chamberworth, of Paris; the sub-



jects are the Indian Fruit-girl, and Water-bearer. The attitudes of these figures are very graceful.

THE INDUSTRY OF ALL NATIONS

Another description of American carriages is copied from a single horse phaeton, manufactured by Mr. W. Chase, of Philadelphia. One peculiarity we notice in it, is the unusual size of the fore-

wheels compared with the hinder, so contrary to the practice of our carriage-builders, but there is no doubt this causes it to run easily. The body of the vehicle seems very light in its construction.



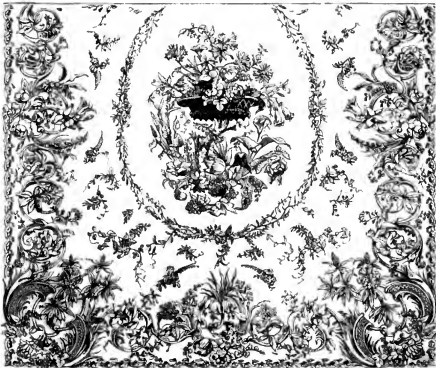
The Table-Cloth called the "Arboreal Exhibition Pattern," is another of the beautiful

fabrics of Mr. M. ASHMEAD, of Belfast. It was designed, in competition, by J. Mackenzie, of the

A wicker GARDEN-CHAIR, contributed by Mr. TOTT, of New York, possesses much novelty, and no little taste, in its ornamental design.



Belfast School of Design, who richly merited the prize he obtained for a composition so excellent.



ART-JOURNAL ILLUSTRATED CATALOGUE

On this and the three following pages, our readers are introduced to illustrations from



some of the PORCELAIN WORKS exhibited by the Government Manufactory at Sevres. This

far-famed establishment, which has now been in existence for more than a century, stands about



seven miles from Paris, and its extensive museum and show-rooms have long been points



of attraction to every visitor to the French Metropolis. The number of workmen employed



in the manufactory is about one hundred and



fifty, and the artists engaged in the ornamental

ART-JOURNAL ILLUSTRATED CATALOGUE

Messrs. Fournelle & RICHARD, are extensive manufacturers, in Paris, of every kind of furniture for ecclesiastical purposes, such as chandeliers,

the ornament is in keeping with the use to which they are applied. The ORNAMENT, or confessional screen, is an elaborate and rich piece of work.



stirrers, monstrances, lamps, cups, &c.: this page is devoted to a few of



their contributions, commencing with a communion SALVER and CHALICE of silver, with gilt ornaments. The two EWERS are more decorated, but



manship of very elegant scarcely necessary for us



and novel design. It seems to remark that, in every



being connected with the forms and ceremonies of the Roman Catholic worship, there is more external magnificence than in any other church.

far above the gaudy vulgarities occasionally fabricated, and termed "Bohemian glass," and which are chiefly remarkable for the strong contrasts of deep colour, and abundant display of gilding upon their surfaces. M. Hoffmann's work has no such defects. The large vase and its pedestal is nearly four feet in height, and is entirely of pure white, except where the leaves bend over, and they are tinted with pale green. Altogether M. Hoffmann's display is satisfactory, as that of any manufacturer in the Exhibition.



The elegant marble CHERRY PIECE, and GLASS, the frame of which is constructed of the same material—in the work of UGHIATTO BOTTICELLI, of Milan, the figure being executed by DEMOSTRUS GANDOLFI, a brother artist of the same city. The design is of much elegance, and highly suggestive.

The TABLE is another of the works of M. Leister, it is carved from the locust tree wood



there is much fancy displayed in the arrangement of the ornament upon the central support,



which is of a quaint and original character. The design and execution are both alike excellent.

ART-JOURNAL ILLUSTRATED CATALOGUE

We should most assuredly have omitted one of the greatest features of the Exhibition had we neglected to introduce into our Catalogue the colonial statue of

the renowned crusader, GODFREY OF BOURGOGNE, modelled by M. STASOVS, of Brussels. It is a work conceived in a noble spirit, and as admirably carried out.

Some objects of manufacture, novel in this country but much practised by



The Statue, underneath is another of the many valuable contributions of Messrs. MANSFORD & SONS, of Birmingham; it is intended for a gas-bracket, and shows a very graceful arrangement of curved lines.



two ornamental jewellers, are exhibited by Mr. F. ALLEN, of Birmingham; we engrave two FLOWER-VASES, of Birmingham.



work, made of fine gold threads throughout; they are exquisitely delicate.

THE INDUSTRY OF ALL NATIONS

Messrs. JACKSON & GOSNELL, the eminent upholsterers, of London, are large contributors



to the Great Exhibition of many important articles of their manufacture. We engrave on



this column a portion of a Book Case, the panels of which are fitted with plate glass, and the end

of a Sofa, showing a demi-figure, boldly carved. The Sideboard and Cheval-Glam, with their



underneath are good in their respective styles. The Book Case on the next page exhibits the best

brass candlesticks and ornaments, are beautiful in design, and admirably carved, the Chairs



taste in its design; the artist has evidently aimed to combine simplicity of idea with a due

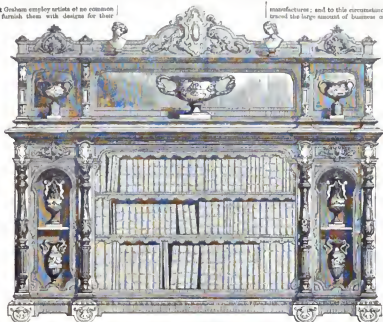


and harmonious colours. It is quite evident, from the examples here shown, that Messrs.

ART-JOURNAL ILLUSTRATED CATALOGUE.

Jackson & Graham employ artists of no common order to furnish them with designs for their

manufactures; and to this circumstance may be traced the large amount of business carried on



by the firm. Public taste has, of late years, in- | ductions find little chance of sale; hence the best | portion to the spirit and taste with which he
creased to such an extent, that mediocre pro- | producer is certain of being recompensed in pro- | may conduct his manufacturing transactions.



THE INDUSTRY OF ALL NATIONS

The manufacture of the particular kind of earthenware generally known as "BRAYAN



WARE," is carried on in places far distant from that ancient town. The three objects occupying



this column are from the factory of M. DE BROSSE, of Langon, in the Department of Indre et



Loire; he is also the producer of other objects, applicable to more purposes of utility. The VASES are beautiful examples of the "ware."

The musical instrument shown in the appended engraving is from the manufactory of Messrs. LAFF & SONS, of London; it is called by the ex-



The engraving underneath is from a printed cloth TABLE COVER, commemorative of the Great Exhibition, manufactured and exhibited by Mr.

W. USTEDWOOD, of London, from a design by Mr. BLOOMSBURY. It is exceedingly rich in its ornamental work, conspicuous among which are the



royal arms of England, surrounded, in the centre and border, by those of the principal nations

contributing to the grand display of industrial art, appropriate motions enclose the whole

ART-JOURNAL ILLUSTRATED CATALOGUE.

From one of our most picturesque and fashionable provincial towns, we have a display of plate



and jewellery unsurpassed by places of greater celebrity. Messrs. MARTIN, GAGNET, & MARTIN,



of Cheltenham, are the contributors of the objects introduced on this page. The first is a richly

shaped CHAMBER-JEN, after Cellini, a sufficient guarantee for its beauty. The next is a BATH-CHUBB, showing great severity and elegance in its design, and very skilful execution. The two



subjects bearing the other columns are respectively termed a PORTE-MONTRE and CHATELAIN; they are made on such a principle as to suit watches of any size, besides having the advantage



of keeping the watch secure and steady. A BUTTER-COOLER succeeds; the dish for the butter is of white marble, the ornament, consisting of leaves and butter-cups, is of silver, the interior of the flowers being gilt; the combination of

these materials produces a very chaotic effect. The last illustration is from a BRACELET, formed of gold, enamel, diamonds, and carnelians, in the following style: the diamonds are placed



over the carnelians; the gold cross-bands connecting the previous stones are slightly enamelled in enamel-work of a rich turquoise-blue colour, forming altogether a brilliant and perfect ornament.



large variety of chronometers and watches. One would scarcely expect to see such productions

emanating from a place having no manufacturing notoriety; but the call upon our national

industry seems to have been answered from every quarter, even where the least expected.

THE INDUSTRY OF ALL NATIONS.

M. RABOY, of Maastricht, Holland, exhibits some tasteful FLOWER-STANDS of bronze; articles



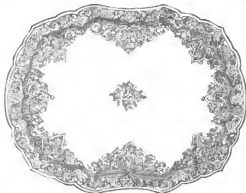
of elegant luxury, which we are glad to know are becoming more generally adopted for the



decoration of our houses. We engrave two specimens, one in the form of an antique tripod, the other in a more free and fanciful style.

We have elsewhere found occasion to notice the great improvement visible in the paper-mosaic works of the present day, we contrasted with those of a few years since; this improvement characterizes the works of nearly every manufacturer in this branch of trade.

The FATHEN-MICHÉ works exhibited by Mr. H. CLAY, comprise tea-trays and articles of furniture of much lightness and elegance. An elaborate and beautiful design for one of these TEA-TRAYS we here engrave, providing that we can give the design only, the brilliancy of colour



and gilding on the dark ground usually adopted, cannot be by us represented. The DRESSING-TABLE bounded is a very light and tasteful pro-

duction: the glass swings freely from scrolls which spring from each side, and thus the ordinary objectionable stand for this necessary



article is obviated, and a positive gain in the general appearance effected. The CHAIR has also the merit of grace and lightness, and the FOOTSTOOL is of a novel and agreeable form. Mr. Clay deserves this word of praise for the skill he has displayed in the selection of designs

for manufacture in this material. It is pleasant to know that manufacturers of such old standing are willing and able thus to exert their capital and ability in upholding the character they have obtained. It is a good and healthy tone of mind, which we are glad to recognize generally.

ART-JOURNAL ILLUSTRATED CATALOGUE

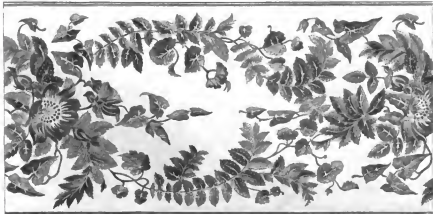
AN EMBROIDERED VERT, manufactured and exhibited by Messrs. McGEE & Co., of Belfast, from a design by J. H. Wilkinson, of the School of Design in that town, combines modesty with elegance of pattern. The drawing gained the prize of £5, offered by the manufacturers for the best design.



This engraving is from a piece of SILK, manufactured by M. GRIER, of Berlin, with whose establishment we were much interested in our recent tour of inspection through Germany. The pattern displays great boldness; the silk itself, we presume, is intended chiefly for Royal use, as explained by the black eagle of Prussia, with its spreading wings.



Among the various textile fabrics exhibited by RISSON, the pattern of which we here introduce; is a piece of the design is very graceful, consisting of floriated wreaths, in which is the passion-flower, one of the most beautiful productions of the garden.



ART-JOURNAL ILLUSTRATED CATALOGUE.

This is another of the CARPETS, manufactured by Messrs. T. SMITH & Co., of whose contributions we have inserted two examples in a former

page. The pattern of this is very bold, and rich in colours, and the fabric itself is of the most luxurious character, uniting elegance of deco-

ration with great warmth, the two grand desiderata requisite in manufacture of this description; we cannot possibly award them higher praise.



Our continental neighbours, on the other side of the Straits of Dover, have undoubtedly made a most excellent display in every kind of cabinet-work; this will not be thought singular by those

who are acquainted with the demand which exists in France, and in Paris especially, for every description of decorative furniture. There is scarcely a house of public entertainment, of

the better kind, in the French metropolis, that cannot show numerous articles in which the skill of the wood-carver and the taste of the designer, are not abundantly manifest; while the



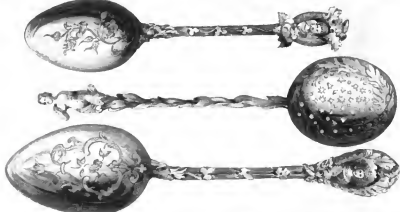
private residences of the middle classes, and of the more wealthy, are supplied according to the

mode on each respectively. The CARYATID now engraved here is manufactured by M. RICHOUET

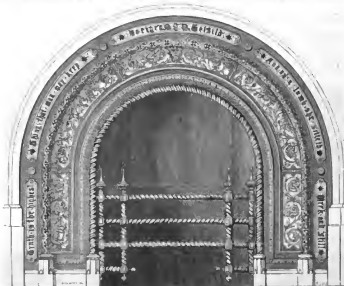
LEVALLOIS; its chief interest, in our estimation, lies in the elegant simplicity of its ornament.

THE INDUSTRY OF ALL NATIONS.

The SPOONS and SPOON-RESTS manufactured and contributed by Mr. W. R. SMITH, of London, will please exceedingly by their novelty, and a rich and graceful style of ornaments: the running foliage on the handles of the spoons is a pretty idea, and the bowl of the spoon-rest is good.



Mr. JAMES, of London, is the manufacturer of the SPOON and SPOON-REST which occupy the remainder of this page. The designs of the former object especially are most elaborate, and were, we are informed, supplied by Messrs. Lawford and Hensket, architects. The spoon



mouldings of the arch are finely varied, and form an agreeable contrast to the broader one, which shows light, Renaissance kind of pattern.



The style and form of the twisted bars are uncommon, adding considerably to its novelty. The slender harmonious well with the stone.

ART-JOURNAL ILLUSTRATED CATALOGUE.

The CHAIR is one of a set, manufactured by Messrs. W. & B. HILTON, of Montreal, in Canada, as a present to the Queen, from the ladies of that place, who have worked the tapestry.



From several Caurens, manufactured and exhibited by Messrs. H. BAZIN & SONS, of Kid-

The illustration underneath is from a danish TABLE-CLOTH, manufactured by Mr. PEARILL, of Copenhagen, especially for the American market. The medallion in the centre is intended



for a portrait of Washington; it is surrounded by devices bearing reference to the part he acted in asserting the independence of his country. The border shows a bold and well-filled pattern.

derminster, we have selected one for the purpose of engraving. It is a Brussels velvet, of an

exceedingly bold and effective pattern, composed of scrolls and the leaves of the palmetto,



with some smaller scattered ornaments. There is infinite variety in the arrangement of the

forms introduced, and great ingenuity and skill must have been exercised in combining them

into an harmonious composition; notwithstanding which, the artist has succeeded in his object.

THE INDUSTRY OF ALL NATIONS.

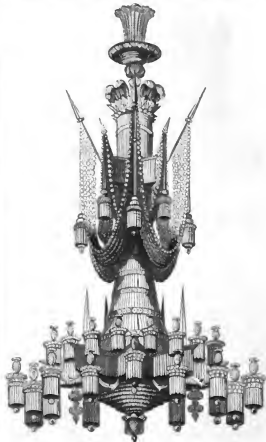
A set of polished steel FIRE-IRONs, with ornate handles, by Messrs. H. & W. TURNER, of Sheffield, have so much elegance imparted to them as can be exhibited on oil-jens affording but little scope for the exercise of the designer's taste.



The illustration that fills the lower part of the page is from a piece of EMBROIDERED CLOTH.

Messrs. HAWCOCK, REEDS, & DUFFY, of London, exhibit a CHANDELIER, of cut glass, for thirty-two lights. The section of the body forms a

star; the upper part is composed of drops, which are arranged in the shape of lanterns. It will present a brilliant appearance when lighted.



from the establishment of Messrs. HORTLEMAN, what appears to be gold thread, on a deep & Co., Manchester. The pattern is worked in



bold relief. The cloth is intended for a table-cover, and a very splendid table-cover it makes.

ART-JOURNAL ILLUSTRATED CATALOGUE

Messrs. W. HARGREAVES & Co., of Sheffield, exhibit a large and well-selected assortment of cutlery, as table knives, cutters, game-cutters, dessert-knives, from which we introduce here

four examples of ornamental handles. The first two are of TABLE-KNIVES, in a bold style of workmanship, and carefully executed; the last is from a GLASS CUTTING-KNIFE, with a blade of

birds at its termination; the third is an ivory-handled BREAD-KNIFE, which, in form, is a manifest improvement upon most of those in general use. All these handles are of fine ivory elaborately carved and mounted with silver ferrules, and the blades are of the highest polished steel.



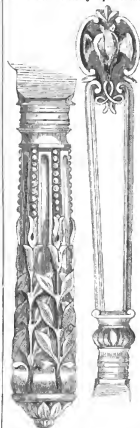
The engraving immediately underneath is from the box of a COFFEE-POT & CRACK, made by M. DELACOUR, an extensive engraver, of Paris. The

design is very elegant in all its details, but its merits are likely to be overlooked, without a close inspection of the work, which is of iron, brassy and richly gilt.



A FURNACE, modelled in plaster by Mr. J. HANMER, Jun., of Pentonville, shows considerable

taste in the art of design as well as skill in the manipulation. The scroll is judiciously orna-



mented with flowers, leaves, and wheat-ears, and a variety of other natural objects, and it encloses some admirably arranged groups of fruit, &c.



THE INDUSTRY OF ALL NATIONS.

The appended design is from a piece of **SILK**, exhibited by **Messrs. RICHMOND & Sons, of London**.

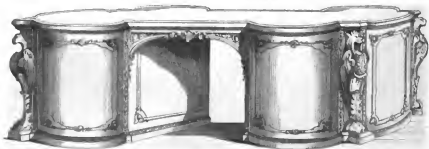
It shows a graceful running pattern of natural objects—the rose, shamrock, and thistle.

Messrs. MERRIMAN & Sons, of Birmingham, have a **CAROLANNA** for ecclesiastical purposes.



A **LIBRARY TABLE**, manufactured by **Messrs. GILSON, of London**, is worthy of the high position which the firm holds as cabinet-makers; it is of very simple construction, but elegant in

its design. the drawers at the angles are boldly carved; the other ornaments are in excellent taste.



ART-JOURNAL ILLUSTRATED CATALOGUE

DAWN'S LOVERS are embodied by Mr. MEYER in a touching and characteristic style; worthily depicting the simplicity and earnestness which the immortal poet has made the prevailing traits of those whose course of love "never did run smooth." The quaint costume gives an air of much truthfulness to the group, which is excellently composed.



A Rhinish legend has furnished M. ECKHARD, of HAMBURG, with the theme for a very lovely statue of LULU, the dangerously beautiful resident of the Luller-borg, who won the bottom in destruction.



THE SHEDDING, by Mr. GILLOW, of London, is of bold design and spirited execution; it is an excellent specimen of the ability of our manu-

facturers in wood-carving, as well as of taste and fancy in composition. It shows a freedom from too great shyness of idea, a determination

to get rid of the trammels of conventional styles, which is very cheering to all who have felt its primary importance to native interests.



THE INDUSTRY OF ALL NATIONS.

MESSRS. MARTIN, of Sheffield, some of whose contributions appeared in a former page of our Catalogue, are the manufacturers and exhibitors of the Diamond Knives engraved underneath.



MR. JAMES ROWLANDS exhibits a gracefully-conceived bas-relief, which he terms "The Last Dream" in life, of a fair and delicate female, and illustrative of the passage, "her sun went down while it was yet day, but unto the upright there

ariseeth light in the darkness." The young girl has sunk to rest, peacefully and trustingly; the volume upon which her hope is founded rests on her bosom, and her last earthly imaginings are of the ever-living spirit who welcomes her.



The manufacturers of BILLIARD-TABLES have recently introduced a great improvement into them, by the substitution of slate tops for wood.



That engraved is of this description, the frame is of Spanish mahogany, boldly carved. The manufacturers are MESSRS. TROTTER & CO., of London.

ART-JOURNAL ILLUSTRATED CATALOGUE.

The exquisitely beautiful BRUZE, enclosed in a marble-jesse of white statuary marble, is manufactured by Messrs. YATES, HAYWOOD, & Co., of the Effingham Works, Rotterdam, from

the design of one of the artists of that establishment, Mr. George Wright. It is certainly one of the most superb objects of this kind which we remember to have seen. The hearth-piece

climbs upwards, and is so contrived that the ashes, falling upon it, run through and are consumed. The moldings are composed of groups of foliage and rustic appendages, in the midst of



which are seated a shepherd and wood-symph, charmingly modelled. The material of which it is made is steel, very highly polished, set with

crystals ornaments; we may add, that its construction is such as to require no fender. Messrs. Yates & Co. exhibit other articles—all designed

and produced on their own premises, by their own workmen; a merit of no common value, and which augments the worth of their contributions.



The contributions from our fellow-countrymen in the Channel Islands are comparatively few, and of those, still fewer which attract attention as objects of manufacturing or decorative art.

The only work we have found available for our purpose is a CHEFFONIERE, or sideboard, manufactured by Mr. G. C. LE FEVRE, of Jersey; it is made of oak, a portion of the wood being the

produce of the island; the designs in the compartments are worked in ivory. The upper part of the sideboard is omitted—as by its means no good as the portion we have engraved.

THE INDUSTRY OF ALL NATIONS.

Messrs. H. C. McCRAE, of Halifax, exhibit numerous specimens of FURNITURE DAMASK, table-covers, poucho stuffs, &c.: we here engrave a piece of the first-named—the furniture-damask—of a bold and good pattern.



This engraving is also from a piece of FURNITURE DAMASK, manufactured by Mr. W. BROWN, of Halifax, an extensive producer of table-covers, &c.



THE CANDLESTICK is one of a pair formed of the purest crystal, by Messrs. F. & C. OSER, of London and Birmingham, for her Majesty the Queen; each of them stands eight feet high, and is made to hold fifteen lights.



THE FRONT OF A FIREPLACE, of bronzed iron, is from the foundry of M. KORTL, of Berlin, and is designed by Stinko, after Thorwaldsen.



The engraving underneath represents a STAINED GLASS WINDOW, executed by Messrs. BELLAMY & ALLAN, of Edinburgh. It is intended for the entrance hall of Glencomiston, the property of Mr. W. Chambers. This estate is held direct from the Crown, on condition that the proprietor, when required, shall present the sovereign with a red rose on the festival of St. John. The design in the centre of the window represents this ceremony, which, according to local tradition, was last performed in 1529.



on behalf of that period, supported by a knight, is offering a rose to the monarch; in the background, a retainers displays the banner of St. John. The picture, as well as the entire window, is surrounded by a rich border of ruby and gold, studded with imitations of roses. The background is pale blue, with gold bands, encircled in white enamel, with the united national emblems—the rose, thistle, and thistle. In the upper corners is the legend—"HIS TRAY THOUGHT (i.e. endure) OVERCOME."

Mr. W. MANMAN, of Derby, exhibits a specimen of IRON WORK, intended for the door of a church. It is, as far as can be ascertained, a facsimile of that placed, in the year 1281, on the door of the chapel in which Prince Edward, afterwards Edward I., and his wife, Eleanor, attended divine service. This attempt on the part of Mr. Manman to imitate the style of



the ancient church wrought iron-work, which was carried to such high perfection during the period referred to, has been eminently successful.



A WINE-COOLER, manufactured in terra-cotta, and exhibited by Mr. W. MANMAN, of Longport, Staffordshire, merits commendation from the excellence of its design; in its form and ornament it displays taste of no ordinary kind. The chimera forming the handles are fanciful, but of a fashion which reminds us of some of the best antiquaries, both in mineral and metallic substances. The work is designed by one of the pupils of the Hanley school—an establishment that, with others of a similar character in the neighbouring locality, has done good service among the "pottery."

ART-JOURNAL ILLUSTRATED CATALOGUE

elegance of its general form proves how a common-place article may be elevated into a tasteful and beautiful work. The small HAND-LAMP beneath is a quaint and not insignificant conception, greatly superior to the ordinary definition,



which, at one period, completely usurped the place of utility. Another graceful HAND-LAMP appears on this column, uniting the necessary qualities of beauty and usefulness. The LAMP affixed to a scroll underneath is intended



for the interior of a carriage, and possesses also its own peculiar merit. The BRACKET-LAMP and the lower half of a CHANDELIER, on the former page, are light and very elegantly decorated ornaments; the pattern of the two being so suited, we presume they are intended for the same room.

Mr. JAMES HEATH, of Bath, exhibits some of the FETTERED CHAIRS which are named after that

city, and universally welcomed by all who need their aid. We engrave two examples, the



upper one constructed to move about a room as the pleasure of the sitter, unassisted by an attendant. The lower, for open air exercise, is very elaborately painted and gilt, combining an



amount of luxurious elegance by no means inapplicable to a work of the kind. On the side panels, and at the back, are paintings, the one indicated in our engraving is from the "Aurora" of Guido.



The SEAT, by Mr. LOR, of London, presents features of great novelty in form and construction. The spring across the instep secures it on the foot without screwing; and a simple con-

venience of plug and socket does the same for the heel. It is made of satin wood, enriched by plates of gilded metal work; the swan's neck in front is a graceful and appropriate ornament.

THE INDUSTRY OF ALL NATIONS.

The **Fine Silver and Razor** which appear on this page are from the well-known manufactory of Messrs. **JOSPH ROSS & SONS**, Sheffield, whose cutlery goods have acquired a reputation for excellence throughout the world. Their



show of knives, razors, scissors, &c., of all descriptions, is, as would be expected, commensurate with the extent of their establishment; and it embraces not only the finished articles, but the several processes or stages of manufacture, from the raw material to the polished blade,

Two elegant examples of the Art-manufactures of America may be found in a pair of **Glas Chandeliers** made and contributed by Messrs. **CONRELL & BAKER**, of Philadelphia. They stand about fifteen feet and a half high, by six

feet wide, having fifteen burners with plain glass globes, and are of brass inlaid. The design is very rich in ornament, and possesses some novelty in the succession of curves ingeniously and tastefully united: the gaskeys represent



branches of fruit, thus combining beauty with utility. Besides these objects the manufacturers exhibit a number of patent solar lamps, which they have named the "danzak lamp," from the rich danzak colour they have succeeded in imparting to the lenses: the designs in these lamps can be varied at pleasure. Messrs. Con-

rell & Baker are the most extensive manufacturers of lamps, chandeliers, gas fixtures, &c., in the United States, employing upwards of seven hundred persons in the several departments of the establishment, which has been in existence for upwards of a quarter of a century; if we may judge from their contributions to the Exhibition their celebrity is not undeserved.



ART-JOURNAL ILLUSTRATED CATALOGUE

This engraving is from another of the admirably constructed and beautifully designed Stoves, manufactured for Messrs. Gray and Son, of Edinburgh, by Messrs. Booth &

Bosson, of Sheffield, the whole of whose works have been objects of very general admiration—and of great attraction to all who desire to combine elegance with comfort "at home."



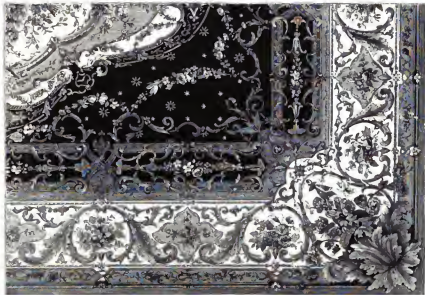
We have given in a former page of our Catalogue, one of the CARPETS contributed by WATSON, BELL, & Co. of London, we now intro-

duce another equally worthy of attentive notice, and high estimation. It is made of a determinate shape, the centre being filled with a rich group

The CLOCK, for a table, or to be placed on a bracket in a hall, is manufactured by Mr. BERRARD, of London; the case shows some bold carving, executed with considerable taste. A large number of horological objects are exhibited by Mr. BENNETT, particularly a model watch on a large scale, constructed to show the most compact form of the modern time-piece, with all its many recent improvements.



of flowers; the double borders are very light and elegant; the outer one, by its delicacy, contrasting well with the dark ground-work.

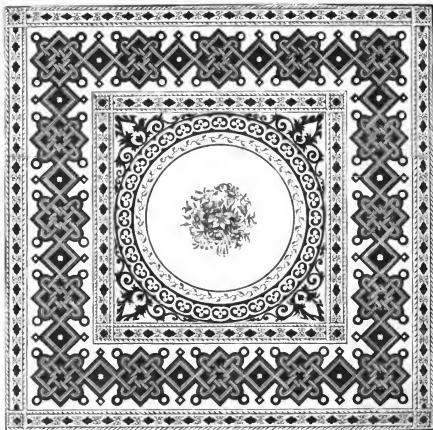


THE INDUSTRY OF ALL NATIONS.

The large engraving is from a **FLOOR-COVERING** of a good, bold pattern, manufactured by Mr. R. Y.

BARNES, of London. We introduce it no less as a correct and appropriate design, than from a

desire to give examples, so far as they appear suitable, of every description of industrial art.



Mr. WOODBURY, of Bakewell, in Derbyshire, has already been noticed by us, and some of his works engraved. We then stated that his ability

had brought him to the notice of royalty, and that he had been commissioned to construct a CONSOLE TABLE TOP, in coloured marbles of the

country, from a design by Mr. GRUNER; this beautiful work we here engrave; it is an excellent example of native talent and ingenuity.



ART-JOURNAL ILLUSTRATED CATALOGUE.

The productions of Mr. Hatz, of Derby, have been heretofore noticed in our pages as admirable examples of ability in a class of manufacture of great local interest; and by which



that interest has been extended far and wide as the result of the excellence of the works produced. Derbyshire is so much celebrated for the mineral space it contains, as for the beauty



of its scenery, and within the shire live many ingenious workmen, who well know how to convert these natural advantages into objects which rival in attraction the productions of



Italy. The black marble, which forms, in most instances, the basis of their work, is nowhere found more pure in its colour and stratification, than in Derbyshire; while the

same spar is unsurpassed in its beauty of tint. The advantage of good material has, therefore, always been ready, in this favoured county, to the hands of its workmen; yet they have been,



ever, they have seen the necessity of progress; have studied the best examples of the antique; have called invention to their aid; and the consequence is, that they have found markets for

for many years, too content with this alone, and have not paid the attention to elegance of form which the articles they produced only required, to insure universal appreciation. Of late, how-

their commodities in all parts of the world. We have already engraved some satisfactory proofs of the success which may attend works of this class, by native artists, from native products;



may direct attention to the works of Mr. Hall as in all respects admirable. This page contains several of his contributions; they exhibit the taste and judgment by which he has been guided in the choice of appropriate and

elegant "authorities." His establishment in Derby has been fully described in the *Art-Journal* for September, 1850; it is extensive, and admirably conducted, and sends forth a variety of works, chiefly of the marbles of Derbyshire.

ART-JOURNAL. ILLUSTRATED CATALOGUE.

with white figures, is of Gothic form. The two large Vases, somewhat similar in form, are of drab-coloured Faria, the flowers and fruit, which



are beautifully modelled in high relief, being white; the centre Vase, of mosaic character.



has a rich jet tint; the pattern is of a deep marine blue, traced in gold. The Flower



Vase on this column is in the Gothic style; stained glass is introduced on certain of the perforated parts. Our limited allotment of space prevents our rendering, by our remarks, full justice to this very admirable establishment.

The DANES of Messrs J. HOLLAND & Co., of Halifax, are rich and beautiful fabrics.

We engrave one—which, for its combination of delicacy and boldness is worthy of especial notice.



The GROUP underneath is another of the contributions of Messrs. T & W. SCOTT, for whom

it was modelled by Mr. GILLARD; it represents Repentance, Faith, and Resurrection, respectively



symbolized by their attitudes. The work is well arranged; it stands nearly two feet high, and is of

Faria. Another group—the Mother—is entitled to high praise. Both are original productions.

ART-JOURNAL ILLUSTRATED CATALOGUE

When Redhalla was embellishing with his immortal pencil the walls of the Vatican, he, per-

haps, had little idea what a legacy he was leaving for the use of future decorators, not alone for

actual copyists, but for those to whom his beautiful designs serve as suggestions to be moulded



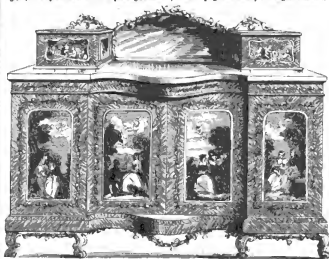
Messrs. ARROWSMITH, of London, exhibit their patent Window-Curtains,—a novelty. It is an application on

a net-work ground, giving it the effect of Brussels lace, and on morose, or other common material, of velvet.

into whatever forms may be required. The two engravings on this page, which the reader will easily distinguish from the others,



The elegant carved silver CABINET, which we also exhibit the phases of "Woman's History." It is a grave, has its panels decorated with paintings illustrating remarkably agreeable example of English furniture.



are from a decorative PANEL, exhibited by Messrs. HICKLIFF & Co., of London; they are of the genuine Renaissance character, and that is sufficient to assert their excellence.

ART-JOURNAL ILLUSTRATED CATALOGUE

The HERALDIC CHAIR, upon the surface of which are sculptured the arms borne by

the ancestors of her most gracious Majesty in the Saxon line, was made by G. BRACE



LOCK of Bolnisi, near Chesterfield, in Derbyshire. It is a work of considerable merit.



Professor STEPHENS of Dresden, exhibits his bas-relief of Cupid on a PANTHER, whose headlong flight has alarmed the youthful god, and disarranged his arrows.

The graceful figure of ANDROMEDA, from the sculpture by Mr. J. A. Bell, has been excellently rendered by the COLEMAN DALL COMPART, and is a work every way honorable to British Art-manufacture. As an example of carving, it may take rank with the best specimens in the Exhibition. The figure is very elegantly conceived,



and has a charming simplicity of treatment. The pedestal is a work of much fancy, and is in the highly-wrought style of the Colossal period. It is emblematic throughout of the story connected with the figure it supports.

ART-JOURNAL ILLUSTRATED CATALOGUE.

The KNIFE-PANDOLS here introduced are from the



manufactory of Mr. W. T. LAY, jun., of London. The first and fifth are from BARBARA KAYNES; they are of ivory, with small figures bearing wheat in their arms; the blades are of highly-polished steel, ornamented on each side with ears of wheat, in open-work. The second is from a LANCET-KNIFE, it shows the figure of Silenus, carrying grapes and other fruits. The fourth, from a TABLE-KNIFE, exhibits a female dancing figure; it has a gold ferrule, and a richly embossed blade. The entire engraving is from a CHERRY-SOOP; it



shows a boy, supporting on his head a basket of fruit, &c.



The engraving underneath is from a BATH, manufactured of slate, by Mr. G. E. MAGNUS, of Fins-

bury; it is of large proportions, the two wings projecting to a sufficient extent to take in the bath between them, as seen in the shaded part of

the engraving, at the base of the centre. The design is in the Italian style, and the slate is enameled in



imitation of various beautiful marbles. In the establishment of Mr. Magnus we have seen many objects of this material, vases, chimney pieces, &c.

THE INDUSTRY OF ALL NATIONS.

There are many individuals too apt to entertain an idea that the manufacturers in provincial towns, excepting always those places especially distinguished for certain classes of productions, as Birmingham, Sheffield, Manchester, &c. are very far behind those of the metropolis. This opinion cannot truly be

entertained after the display which the provinces have made in the Exhibition. Here, for instance, we have, in the Cabinet of Mr. FARRER, of Norwich, a specimen of work that would do credit to the first house in London. It is made of walnut-wood and ebony, richly carved, from a bold and well-contrived Italian design.



The **FARRER** is manufactured and contributed by Messrs. ROBERTSON, CARL, & STARR, of Sheffield, some of whose beautiful stores have already been illustrated by us, and to which the present

field, some of whose beautiful stores have already been illustrated by us, and to which the present

Mr. F. H. THOMSON, of Glasgow, exhibits some beautiful specimens of electro-plating, two of which we select for engraving—a **CUP**, supported by a figure of **Cupid**, and a **TEA-TRAY** by that of **Tiny**. There is much ability displayed in these



and other works exhibited by this firm; and it is something to find manufacturers forming the worn-out pulse of their predecessors for new ones, even though they do not exactly reach those we should wish to see them pursuing.



object is a suitable addition to the frontispiece. The curved outline flows gracefully from the centre.



ART-JOURNAL ILLUSTRATED CATALOGUE.

The **FOUNT** is of terra-cotta, from Switzerland, made by J. ZENGLER-FELLS, of Winterthur, in the canton of Zurich. The general arrangement of the architectural ornament is in the best taste of the later Gothic style.



The **ALMS-BASINS** by Mr. J. WITTEL, of Easter, are carved from the wood of the walnut tree; they are lined with crimson or scarlet silk.

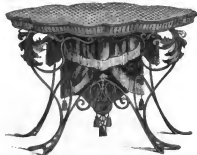


valvet. Inscriptions in medieval characters surround the movable lid, such as "All things come of thee, and of thine own have we give



thee."—"Freely ye have received, freely give." The ornament appears of a very graceful and appropriate character for ecclesiastical purposes.

Among the Viennese manufacturers, few have exhibited more ability in designs for furniture than M. KIRCHNER, whose **LADY'S WORK-TABLE** we here engrave. The flow of line throughout its composition is very free and elegant; there is also much taste displayed in the arrangement of the draperies in the centre, which are of delicate and varied tints.



M. CARL LEUTNER, of Vienna, is the maker of the **PRAYER-BURN** below, which is remarkable for the finished elegance of its details; constructed of costly and beautiful woods, its value is enhanced by the artistic taste of its design; it possesses some claim to originality of style, following the



particular school of ornament. These devotional pieces of furniture are unknown among us, but are very common on the continent; the Kabinett furnishes several beautiful examples of this kind of manufacture.

THE INDUSTRY OF ALL NATIONS.

MEYER, DOR, HAZLETTON, & Co., of Boston, U. S., exhibits an admirably curved Table of ebony.



Mr. HOPKINS of Wimburne contributes a Door Handle of Gothic design, lined with coloured glass and china, a combination of new materials.



We introduce here two out of the numerous Carpets contributed by the distinguished firm of Messrs. RIGUELLARD, ROYER, & CHOQUEUIL, of Paris.



ART-JOURNAL ILLUSTRATED CATALOGUE

Messrs. BAILEY & SON, of London, exhibit a large number of artistic works



included in the general denomination



of "hardware," which are deserving of



high praise from the great amount of
care bestowed upon their design and

execution. The ornamental cast-iron is particularly good; the
DOOR-HANDLES, KNOCKERS, and BELL-PULLS, a few of which we



have selected for engraving, will testify fully to this fact; they
embrace much variety of style, but each style is admirably

rendered. The HALL-STOVE is novel in
design and bold in its details. The



wrought-iron BALCONY has been placed



by the Royal Commissioners in the Fine



Art court—a very marked testimony
to the merit of a really beautiful work.



THE INDUSTRY OF ALL NATIONS

The statue engraved on this column is by M. GIBBS, of Antwerp, and is entitled by the sculptor "THE FAITHFUL MEXICANA," the story being told with graceful simplicity. It is that



of a young Greek girl separated from her lover, who is refreshing the carrier-pigeon, returned from conveying to him her message of affection.



The Austrian department shows various examples of INSLAT FLORISSIMO, by MM. LEITNER and SOU, of Vienna; we introduce here one of their patterns—a star upon a ground of dark wood.

Messrs. M'ALPIN, STEDD, & Co., of Osnaburg, Dale, near Carlisle, contribute several specimens



of CROST-POURTEUR, manufactured of cotton | velvet and of cotton, and printed by blocks



and machinery. Two of their patterns are | engraved on this page; they are both excellent.

ART-JOURNAL ILLUSTRATED CATALOGUE

The FOUNTAIN, which presents many features of novelty and grandeur of general construction, is

by Professor KAMPE, of Berlin, whose group of "The Boy and Swan," which forms the centre,

The three glass VASES are by MEISSNER, of Wittenberg, in Austria. They



appears in more instances than one in the Crystal Palace, and is a favourite work of the artist. The fountain ornaments the gardens of Charlottenburg, the summer residence of the King of Prussia.



There is a very numerous class of clever sculptors in Paris, who find constant occupation in working upon CHIMNEY-Pieces, and other occasional house decorations. These works are generally carried on in the ateliers of the artists, at their own risk. We engrave a portion of one exhibited by M. LEBLANC, of Paris.



principally differ from those by Hoffmann, which we have already engraved, by a



more frequent use of polished surface, and the introduction of gold rims. Many of



the forms exhibit much elegance. The prevailing colours are pink, green, and white; some of them are richly engraved.

THE INDUSTRY OF ALL NATIONS.

Messrs. J. & M. F. Ems. & Co., proprietors of the Pottery Works Glasgow, exhibit the various



objects illustrated in this column; they are made principally of Faïence and terra-cotta.



and are designed after some of the best antique models. The Toilet Set is especially elegant.



The Sculptor RACON, of BESANCON, exhibits the Statue of VICTORY—a work remarkable for its freedom from ordinary conventionalities of treatment, and for general vigour of conception. The action is that of the Graces suddenly awakened to the merit of the victor, and about



to raise the laurel crown for his due reward. The entire pose of the figure is original; she turns half round in her seat, the action being that of sudden thought and prompt attention, with a willing promptitude to acknowledge merit.



The above pattern exhibits that adopted for one of the INLAID FLOORS of coloured woods, designed and executed by M. LEROUX, of VIENNA.

Messrs. JACKSON & SOUS, of London, are ex- | sensive manufacturers of works in papier-mâché.



carton-pierre, and composition, for decoration | and furniture. We introduce on this page four



of their contributions to the Exhibition, different | in character. The first is an ORNAMENT in high

relief, the subject a dog attacking a duck's nest; the other, of a similar description, shows two



dogs fighting over the nest of a hen; these subjects are very cleverly modelled. A Carpe-



LASSON exhibits a very pretty design; and the Decorative that follows it is a bold example of the Italian style, with its grotesque ornamentation.

THE INDUSTRY OF ALL NATIONS.

Among the silver works manufactured and exhibited by Messrs. HILLIARD & THOMASON, of



Birmingham, is a prettily designed JEFFERY'S CORAL, in which appears a child ringing a bell.

The graceful statue of the youthful BACCHUS, posing on the moving grapes, is by LACROIX.



NESCHET, of Florence, and is the production of one who has perfected his taste in the best school.

The appended engraving will be easily recognised by hundreds of visitors to the Exhibition, as the INTERIOR OF HER MAJESTY'S THEATRE,

drawn from a model made of card board by Mr. T. D. DUNSTON, the ornaments are painted by Mr. Powell. The representation is most accurate.



ART-JOURNAL ILLUSTRATED CATALOGUE

Among the large variety of objects in silver, manufactured and contributed by Mr. G. R. COLLIS, of Birmingham, are the **CANDELABRUM** and **CENTER PIECE** engraved on this page. Without any attempt at originality



of idea, the arrangement of the scrolls and foliated ornament in such is good and effective. In the lower object we should have preferred to see a less massive introduction of the scroll work, which would give it a



greater degree of lightness. We notice, among the contributions of Mr. Collis, a solid silver table top, weighing nearly nine hundred ounces, for the Governor of Aleppo; and numerous other specimens of silver manufacture, many of which are deserving of illustration, had our space permitted.

The **TABLE** introduced underneath is from the manufactory of Mr. J. FLETCHER, of Cork; he terms it the "**Gladiatorial Table**," from the figure of a gladiator supporting the top. The idea exhibits great originality.



The most valuable contributions from the vast empire of Russia are, unquestionably, her mineral and other natural productions. Of manufactured objects we notice only a few specimens, except in braille fabrics.



The engraving above is from a small model of a **CATHEDRAL DOOR**, executed in bronze by Count Tolstoy, of St. Petersburg. The original of this, also in bronze, thirty feet in height, adorns the cathedral of Moscow.

THE INDUSTRY OF ALL NATIONS.

The engraving which occupies so conspicuous a place on this page, is from a piece of exquisite WOOD-CARVING, executed and contributed by Mr. T. W. WALLIS, of Louth, in Lincolnshire. It is the first of a series of four that the sculptor

purposes to execute, representing the four seasons. This is intended for "Spring," symbolised by flowers, the growth of that season, among which birds are introduced; these are arranged with an elegance and natural disposition

The manufactory of Messrs. CHARLES MASON & SON, of Hanley, is one of the largest and oldest in the pottery districts, having been established by the father of Mr. Meigh, Senr., about seventy years back; in proof of its extent,



of these several forms that can scarcely be surpassed, and are carved with exceeding boldness of relief, some of the objects projecting twelve

inches from the background. The work stands five and a half feet high, by nearly three feet of relief, some of the objects projecting twelve



we may remark that upwards of seven hundred hands are employed there in the various departments; that more than two hundred and fifty tons of coals are consumed every week; and



that, during the same short space of time, eighty tons of clay are made up into their various articles of manufacture. Of these, which consist exclusively of earthenware, Faience, and stoneware,



were about two-thirds are for the home market, and the remainder for exportation. We introduce on this column a CAULDRON, adapted from a celebrated wine-cup by Cellier, and two Jars.

ART-JOURNAL ILLUSTRATED CATALOGUE

The subjects on this column are also from the contributions of Messrs. MILES & SON. The



JUN adorned with the vine exhibits a young Bacchante inhaling the juice of the grape; the



BOWEN-CROOKER is covered with a trellis-work, overgrown with creeping plants; the other two



objects are FLOWER-TONS, differing greatly in form and style of ornament, but both excellent



and appropriate to their purpose; the idea of the basket among the leaves, in the latter, is good.

THE CRYSTAL-PICNIC, serving the double purpose of an apéritif and a condiment, is manufactured by Messrs. HAWKSWORTH, EYER, & CO.,

of Sheffield. It is a testimonial presented to Mr. M. J. Ellison, of that place, by his fellow-townsmen, for his exertions in promoting there



the many game of cricket, for which Sheffield has, within the last few years, become celebrated.

THE TURKISH, by the same manufacturers, is an adaptation of what is generally known as the



"serious pattern," with scroll handles and feet, &c., in the Louis Quatorze style; it is elegant

in form, and far more consistent with our ideas of beauty than if more elaborately ornamented.

THE INDUSTRY OF ALL NATIONS.

The contributions of Mr. W. WINDFIELD, of the Cambridge-street Works, Birmingham, occupy a prominent position on one side of the "Birmingham Court" in the Exhibition. They consist

of articles of a similar kind, the majority of which are distinguished by tasteful design and most excellent workmanship. On this and the two following columns will be found illustrations from a few we have selected to demonstrate the variety and importance of the manufactures of this establishment. The first column exhibits three ESTILLANS, good in design, and of a rich and handsome appearance. The GAS LAMP and BRACKET in one which, we understand, has been purchased by the Queen, a fact that supercedes the necessity of any further reference, as it bears ample testimony to the excellence of

the work - the figures introduced are of Paris.



principally of metallic bodetons, of which Mr. Windfield is one of the oldest and most extensive manufacturers, gas fittings of every description, window-curtains, curtain bands, and a multitude



The two CURTAIN BANDS are graceful appendages to the windows of the elegant drawing room.



ART-JOURNAL ILLUSTRATED CATALOGUE.

The two **CLARET-JOBS** on this column are manufactured by Messrs. LAYTON & SONS, of Newcastle-upon-Tyne, silversmiths and jewellers.



These objects derive their value less from the metal of which they are made than from the taste displayed in the designs and the skilful work.



nearship between on them. They differ greatly in their style, but the delicacy and boldness displayed in both are worthy of commendation.

Resuming here our notice of the works of Mr. WENFIELD, of Birmingham, we commence with a **CHILD'S COAT**, which he terms the "Angel Coat," from the figure very happily introduced into it, suggested by the traditional idea that, in

the earlier stages of our existence especially,



these unseen beings are present to watch over and protect us; the body and frame of the coat are very elegant. The **SEVENTH** that follows is excellent in the character of its design; the fluted taper pillars are drawn by a new process,

that enables a tube of this description to be made with the same facility as an ordinary parallel one. On the next page is a wall bracket, ornamented with the figure of "Daphne," modelled by Mr. Bell; by its side is a



LAMP, of more than ordinary excellence in the arrangement of its composition: while the superb **EISENBERG** that completes our illustrations is one

of the best objects of its kind ever brought before our notice. The style of this production is resplendent, and it abounds in all those rich

THE INDUSTRY OF ALL NATIONS.

features peculiar to that period of decorative art; the figures on the pillars are modelled with great care, but those on the head and foot-rails



are objectionable from their unsartistic attitude.



The contributions of M. RICHOUX, the eminent jeweller of Paris, are so truly beautiful



that we cannot resist the temptation of adding another column of illustrations to those already



given in preceding pages. The three linocuts are exquisite in design, and of the most delicate



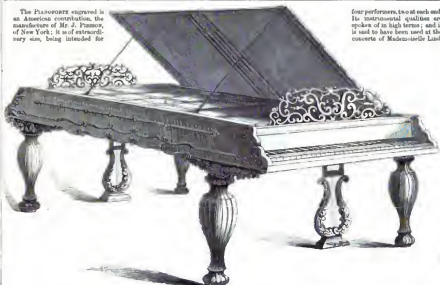
workmanship; and a close examination of the Table will show how much artistic taste and



skill have been expended on its production.

ART-JOURNAL ILLUSTRATED CATALOGUE

The **PIANOFORTE** engraved is an American contribution, the manufacture of Mr. J. P. Francis, of New York; it is said extraordinary size, being intended for



four performers, two at each end. Its instrumental qualities are spoken of in high terms; and it is said to have been used at the concerts of Madame-Urile Lital.

The very elegant **BAPTISMAL FONT**, sculptured in Carr stone, is designed and executed by Mr. J. Curtis, of Oxford, and is one of the principal ornaments



of the English Fine Arts Court. Symbolical figures of angels decorate its sides, bearing emblematic devices, the entire being covered with foliage and fruit.

The **LOCK and KEY** are exhibited by Mr. J. Gimson, Jun., of Wolverhampton; he terms it an improved lock for doors, post-offices, &c.



THE INDUSTRY OF ALL NATIONS

THE BROOKLYN FLINT GLASS WORKS, situated at New York U. S., contribute a well-filled



stand, which occupies a central position in the American de-



partment of the Great Exhibi-
tion. There is enough novelty
of form in these works to



assure us that our transatlantic
brothers are fully aware of
the marvellous value of Art.

THE CRUCADER CHESS TABLE, is the work of Mr. GRAYDON, of Dublin; the pieces represent the chief characters of the Crusades, under Cour-de-Lion. These pieces were carved in ivory by Mr. SLAUGHT, of London.



MESSRS. C. W. DODD & CO., of Leeds, exhibit a number of beautiful retro-pie Bronzes, Kilderminter, and Thersley Carvers; we engrave an elegant and exceed-
ingly rich pattern, designed for them by Mr. Harvey.



ART-JOURNAL ILLUSTRATED CATALOGUE.

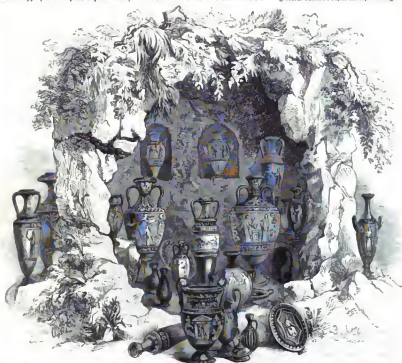
Messrs. GOSNOL of Sheffield exhibit articles of electro-plate, from which we select a group possessing much gracefulness of contour. The

CANDELABRA is of novel decoration, and the CRUCIFIXES of light and elegant form, the ornament being well adapted to the objects manufactured.



Mr. BAYLY, of London, some of whose successful imitations of antique vases, &c., are engraved on a former page of our Catalogue, has adopted the appropriate and picturesque method

of exhibiting his works, in a fac-simile of an EGYPTIAN TOMB, the various niches containing their urns, and the ground covered with palmers and sacrificial vases of a characteristic kind.



Mr. BENNET, of Dublin, exhibits the very



graceful CLAMP-JOB, in silver, here engraved.

THE INDUSTRY OF ALL NATIONS.

Mr. T. EARLE has embodied the story of JACOB AND REBEKAH, in a gracefully conceived group. The shepherd stands by the well where the maiden fills her water-vessel, and tells his tale with simple earnestness.



The Vase in Terra Cotta, is produced at the works of Messrs. FRANKLIN, MILLER, & Co., of Northfield, Glasgow, and contains figures typical of the great gathering in 1851. In colour and manipulation it is decidedly good.



Mr. WATTS, of Dockroy Hall Mills, Kendal, a carpet manufacturer of eminence, contributes among many other very excellent specimens, the



Kidderminster CARPET we have engraved. The fabric is double cloth, not twilled in the warp, and the colouring is produced by change of the shuttle.

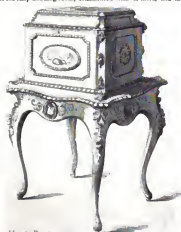
ART-JOURNAL ILLUSTRATED CATALOGUE

This engraving is from a TABLE COVER, designed and executed by Messrs. Webb & Son, of Spitalfields, for Messrs. DEWAN & Co., of London.



The two objects filling the lower part of this page are from examples of the cabinet work of Mr. J. M. LEVEY, of London. The first is an ECUISSE, of satin wood, in the Louis Quatorze style, inlaid with tulip-wood in flowers and scroll-work. The other combines a JEWEL-CASE and STAND, it is made

of the tulip and kingwoods, ornamented with or-molu, and inlaid



with Herres china. Another of the contributions

of M. Levey, which our space would not allow us to illustrate, is a very beautiful sideboard

formed of a wood, the growth of New Zealand.

THE INDUSTRY OF ALL NATIONS

A TABLE, in paper-maché, which, we presume, is intended for a ladies' work-table, is from the manufactory of Messrs. HALLIBURD & WALLING, of Birmingham. Its vase-like form is a novelty in this description of cabinet manufacture.

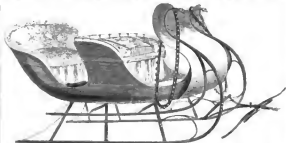


The second engraving on this column is from the other contribution of Messrs. NASTON, JONES, & WELSH, to which allusion is elsewhere made.



It is a portion of an ALTAR-CLOTH, embroidered by hand, in gold and silk, in the design of a dove, drawn in the style of the ancient illuminators.

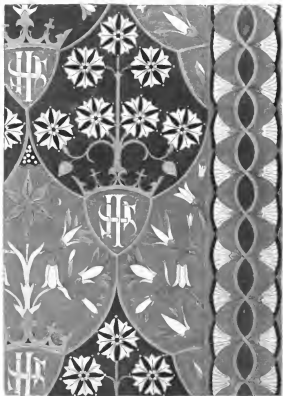
The SLEDGE, from which the engraving underneath is copied, is an American production, manufactured by Messrs. J. GOODE & Co., of



From the numerous articles of merit in ALBANY, Cloves, hangings, &c., exhibited by Messrs. NASTON, JONES, & WELSH, of Birmingham, we select two—engravings of which occupy the lower part

Albany, U.S. It is a double-bodied carriage, of excellent workmanship, to be drawn by two ponies for which its construction admirably fits it.

of this page. That underneath is a portion of the ORNAMENT of an archbishop's cope, designed for the Anglican church; the whole of the enrichments are worked by hand in gold and silk.



The simplicity of the worship of the English church is most striking, when compared with that of the church from which it springs; even

in our highest festivals, there is little room for that "outward adornment," to which the subjects here engraved are meant to be applied.

ART-JOURNAL ILLUSTRATED CATALOGUE

The original of the appended engraving is a CLOCK and INKSTAND for a library table; it is exhibited by Mr. J. HILL, of London, the manufacturer of the clock; the case and stand are beautifully carved by Mr. W. G. Rogers, the



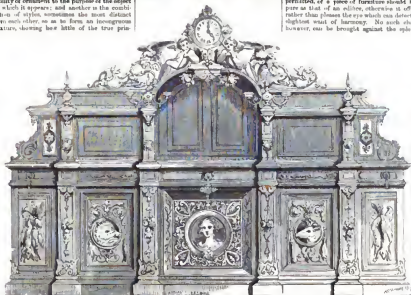
One of the great defects we have frequently noticed in decorative furniture is the inapplicability of ornament to the purpose of the object on which it appears; and another is the combination of styles, sometimes the most distinct from each other, so as to form an incongruous mixture, showing how little of the true prin-

eminent sculptor in wood, who has also executed several other clock-cases for Mr. Hux, that appear in the Exhibition, and which are well worthy of his high reputation. The work before us forms an elegant and useful ornament.

On the opposite page is an illustration from the paper-maché TABLE of Messrs. HALLIBROOK & WELLING, of Birmingham; another, of a different character, appears underneath, both in its form, and its ornamentation. It exhibits a taste that qualifies it for a place in the boudoir.



cost of workmanship, may be expended fruitlessly. The architecture, if the term may be permitted, of a piece of furniture should be as pure as that of an edifice, otherwise it offends rather than pleases the eye which can detect the slightest want of harmony. No such charges, however, can be brought against the splendid



UNDERBOARD of M. E. P. DURANT, of Paris, which, in design and execution, may compete with the

best which the Exhibition has called forth. The leading idea of this work is eminently good.

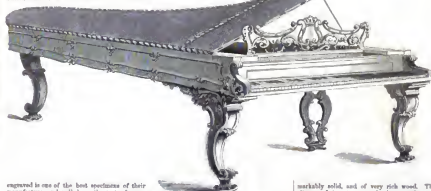
while the several details of which the ornaments are formed, at once declare its intended purpose.

THE INDUSTRY OF ALL NATIONS.

A GIRL AT A SPRING is a favorite subject with English painters and sculptors; Mr. W. F. WOODCOCK has here brought forward a figure which displays considerable elegance of attitude.



THE PIANO FORTÉ is a contribution from the manufactory of Mr. CHICKERING, of Boston. United States; his instruments have obtained



engraved in one of the best specimens of their manufacture, and will bear the test of comparison with those of the most celebrated piano-forte makers of London or Paris. The exterior of the instrument is designed with much taste.

The two engravings placed in this column are from an imperial quarto *BLAZE*, bound in morocco, by Mr. E. NAIL, of Edinburgh, and ornamented in a very costly manner, with the



Cathedral St. John's, Edinburgh, and St. Giles's, Edinburgh, the whole executed from the bell; and wrought with the hand. Mr. Nail is



high reputation, even among European professors who have tried them, for their brilliancy of tone

and their power. That which we have here

markedly solid, and of very rich wood. The climate of America compels the manufacturer of musical instruments to study solidity rather than lightness in most objects constructed principally of wood, such as piano-fortes, harps, &c.

ART-JOURNAL. ILLUSTRATED CATALOGUE.

The engraving underneath, stretching across the page, shows the top of a *Salon*, more furnished by M. JACQUETON, of Paris, whose

name has appeared in other parts of our Catalogue.

Japan. The work is beautifully carved in the style of the best period of Italian sculpture art, and merits high praise for design and execution.



The contributions in paper mache of Messrs. BRISSE & FOS, of Oxford, are numerous: they consist of tables, work-tables, writing-desks,

being sufficiently subdued, and regard being had, generally, to harmony of composition. They derive much of their interest and attraction

The piece of *Exposition* intended to decorate the front of a waistcoat, is exhibited by Messrs. DARTON and COOPER, of Hoxton; the pattern exhibits a *Crocus*, round which flowers are clinging: the work is executed with great delicacy, and exhibits considerable taste in design.



tea-trays, albums, fire-screens, portfolios, &c., all of which are in good taste; the ornamentation



from the paintings with which they are embellished, consisting of some of the most pre-



The *Crown* is another of the contributions of Messrs. DARTON, of London, to whose works we have frequently referred. It presents a solidity of construction that would have appeared too



triquis or celebrated edifices in Oxford, as

well as sketches taken from its outskirts.



naïve, if not lightened by the character of the ornament with which it is judiciously relieved.

THE INDUSTRY OF ALL NATIONS

The town of Paisley maintains the reputation it has long enjoyed for the manufacture of woollen and worsted textile fabrics, in shawls, plaids, tartans, &c. We here engrave one of the woven long Shawls, exhibited by Messrs. J. & A.



lack of the engraver is rendered intelligible, without the aid of colour, although to render such a variety of forms is by no means easy; and even with all his skill, a more black and white

representation, of this piece: the design is a very elaborate composition of detailed forms, arranged in a most intricate pattern, yet exhibiting little or nothing of that confusion which might be looked for in such a multiplicity of details. The

On this and the succeeding column, are introduced illustrations of some of the silver goods manufactured by M^{rs}. CHAMBERLAIN & CO., of



Paris, who are entitled to take rank with the best silversmiths of the French metropolis, for



purity of taste in the designs they have here furnished. Our first subject is a CREAM JUG of



very elegant form, slightly ornamented in a good style: the next is a FLOWER-STAND, showing much originality of design, as regards the con-

struction of the pattern does but more justice to this rich and beautiful object of manufacturing art, one of the best among the many excellent productions emanating from Paisley.

tion of the two principal parts. The engraved work on the *Coronet-Pot* is executed with



great delicacy in the *Renaissance* style. The *Candelabrum* is gracefully modelled, and shows



considerable lightness in the design. The *Vase*, concluding the series, is a bold composition,

occupying the central place in the Crystal Palace the *Glass Fountain*, by Messrs. Chance, of Birmingham, is, perhaps, the most striking object in the Exhibition; the lightness and beauty, as

well as the perfect novelty of its design, have rendered it the theme of admiration with all visitors. The ingenuity with which this has been effected is very perfect; it is supported



by bars of iron, which are so completely embedded in the glass shaft, as to be invisible, and in no degree interfering with the purity and crystalline effect of the whole object.

THE INDUSTRY OF ALL NATIONS

Many of the manufacturers of our country towns have succeeded in securing that general claim to notice, which, while awarded to them in their own locality, they might have failed to have obtained, but for the great and general

competition called forth by the invitation of 1851. The TABLE by Mr PALMER, an eminent upholsterer of Lusk, is an excellent example of provincial manufacture; it is very graceful in design, and the execution is of a most satisfactory kind.



Mr. C. J. RICHMOND is well known by his excellent works on Elizabethan ornament and furniture, in which he has, with much persever-

ance and ability, pointed out the peculiarities, and rich sources, visible in that school of design. He has now practically realised his knowledge,



by the production of various ARTICLES OF FURNITURE, preserving all the picturesque richness

of the style, combined with the knowledge of its leading principles, which elevate these works.

The CHAIR is engraved from one manufactured by M. RAJAT, of Paris, who contributes numerous articles of furniture, manifesting good taste, and as little impidity of workmanship. The style of this chair is Elizabethan, well carried out.



A terra-cotta VASE, from the works of Messrs. PIERCE, MILLET, & Co., of Henthfield, near Glasgow, shows, among its other ornaments, a



mythical procession, designed in the style of the antique. These figures are modelled with great accuracy, and are arranged in an artistic manner.

ART-JOURNAL ILLUSTRATED CATALOGUE

The CONSOLE-Glass and TABLE combined, are designed and manufactured by Mr. S. LEANE, of London; the frames are carved in American pine and lime-tree woods, and double gilt in matted and burnished gold.

The style is a variation of the Louis Quatorze; birds, flowers, and winged horses being mingled with the other description of ornamental work, and giving to the whole more novelty than as are often accustomed to see.



Among the numerous objects of cabinet-work manufactured by Messrs. GILLLOW & Co., of London, is a Sofa, termed a "Wanstead

Sofa." It has little carved work, but it is of a good order; the griffins at each end, forming the legs, are sculptured with boldness.



These Vases are the productions of Captain BRADCLIFF, and are formed in terra cotta, of two kinds. The



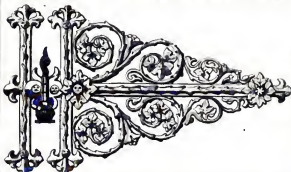
body of each vase is of deep red, the figures of a much



yellowish clay, both being the production of Ireland

THE INDUSTRY OF ALL NATIONS.

The GORME HINGE is manufactured and exhibited by Messrs. BARNARD and BUNN, of Norwich. It is of wrought iron, and is a well-directed



A *STRUTHER*, designed and manufactured by Mr. T. FOX, of London, is a fine example of this description of furniture. The design is in

attempt to revive the ancient iron smith-work, of which many of our old ecclesiastical edifices and baronial mansions furnish fine examples.

the Elizabethan style, but showing greater lightness than we usually find in the carved works of that period. It is made of walnut, relieved by



gilding. The footboard is divided into panels, and in the centre is a shield, on which appears a Bacchantian mask; curved figures are placed at

each corner. The backboard is stuffed, and the furniture is of light blue silk with satin margins and white trimmings. It is of good workmanship

The manufactory of Messrs. J. ROSE & Co., of



Coleport, Shropshire, has obtained considerable



excellence for its productions in embossed porce-



lain, which bear comparison for beauty of ma-

ART-JOURNAL ILLUSTRATED CATALOGUE

trial and skill of workmanship, with the best of the Pottery districts of Staffordshire. Some idea of the



variety and originality of their patterns, combined with other good qualities, may be received from the examples



we have here introduced. The first column commences with a Dresden Plate, the border of which shows a



planning tastefully, while the groups of fruit are painted with much taste. The Flower-Vase that follows is also



new in design, and appropriate; and the Firenze is entitled to favourable notice. On this column we engrave



specimens of Tea and Coffee-Cups, all of which are characterized by novelty of design in their ornament;



and in this column is justly entitled to a similar remark. The



group which follows is composed chiefly of Faenza-Dresden, de-



signed in the character of the style known as the "Lombard Quattrocento." The Ussery or



FIGURE—Pack throat on a washroom



—is of Paris. It is a clever design and



the figures are capitally modelled. It is



we believe, the work of the late admirable sculptor, Mr. Pitts, and finished by his son.

THE INDUSTRY OF ALL NATIONS.

The figure placed on this column is from another of the models exhibited by Mr. F. M. MILLEN. The sculptor has given it the title of *SEASON*, symbolizing that season by the doves perched on the hand of the figure, and the plough, modelled after an antique agricultural implement, on which it rests. The embodiment of the idea is carried out in a graceful manner, and the pose of the figure is remarkably easy.



The engraving underneath is from a piece of *EMBROIDERED TISSUE*, exhibited by Messrs. BERNARD, TWENTMAN, & CO. of London.



The illustration above is a portion of a Gothic, *CHRIST THE PRINCE* sculpture by M. LENOIR, of Paris.



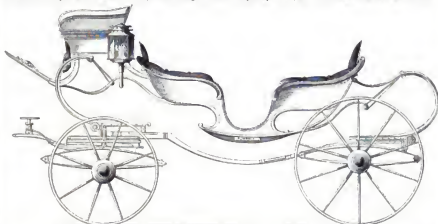
A *CONSOLE CHEST* is exhibited by Messrs. THOMPSON & SONS, of Bristol. It is made of English walnut-wood, the top is of statuary marble, set in a rich moulding of ebony and tortoiseshell.

ART-JOURNAL ILLUSTRATED CATALOGUE

The Carriage here introduced is manufactured by Messrs. H. & E. Vasey, of Bath; it belongs to the class usually termed "seables." The

general appearance of this carriage is very elegant, and all the springs being fixed with india rubber bearings, it "rides" very easily. The

body, &c., is painted in rich ultra-marine blue, relieved with white and amber, in delicate lines; and it is lined with drab silk and lace



Messrs. HILLIARD & TUCKERMAN, of Birmingham, are the contributors of fish-knives and forks,

The engraving underneath shows the pattern of a DEWMAN'S CASE, grained by patent

machinery, at the factory of Messrs. J. DUNN & Co., of Craig, near Manchester. The company



superiority, &c. We engrave here the HANDLE of a FISH-KNIFE, very excellent in design.



tion of this design is exceedingly bold, though we cannot assign to it much originality of inven-

tion. Messrs. Bright are also exhibitors of velvet pile carpets, tapestries, furniture-covers, &c.

THE INDUSTRY OF ALL NATIONS

We occupy this page with works by M. LAMMER, who may be, with justice, considered the most important Austrian manufacturer, that he claims high rank, as well for the artistic taste as for the beauty with which his

tures, and other objects of art, which may thus be conveniently and elegantly arranged over their surface. The figure who hold them, the

haughty foliage, and the equally fanciful group of heraldic serpents forming the base, are all remarkable for the vigour and delicacy with which



works are executed, will be readily admitted by those who inspect the four painted apartments he has furnished for the inspection of "the world," as the Exhibition. A very grace-



ful novelty is represented in our first cut: it is an ORNAMENTAL STAND, of a fanciful and original design, the large framed boards of rosewood being intended for the exhibition of small mini-



they are carved. The small SETTEE beneath is design, and is not redeemed from heaviness. In some instances, parts are better than the whole



of these articles of furniture, and many that study in detail: we engrave the central portion might be passed by as ordinary looking, deserve of a SOFA BACK as an illustration of this, which



possess elegance. The TABLE beneath is intended for a drawing-room: it is of the finest coloured and most costly wood. The CHAIR is

of sumptuous construction, whether its carved work, or its upholstery, be considered, it is constructed with the strictest attention to comfort.

ART-JOURNAL ILLUSTRATED CATALOGUE

The engravings on this page are from a suite of curved decorative furniture, consisting of about twenty objects; they are manufactured



by Mr. A. J. Jones, of Dublin, from his own designs, which are intended to illustrate Irish history and antiquities; the wood of which they

are made is Irish bog-yew. The FATHER, or arm-chair, shows at the back busts of ancient Irish warriors, supporting the ancient arms of



Ireland; the elbows are represented by wolf dogs, one in action, the other recumbent. The Tea-rot, being a receptacle for foreign produce,



is appropriately ornamented; its base exhibits the chase of the guest deer by wolf dogs. A

sarcophagus WINE-COOLER is elaborately sculptured on the four sides, and enriched with lac-

chanian busts at the angles; a figure of Hibernia surmounts the top, with the accessories of the wolf-dog, harp, &c. The FOLE-HAZEN, one of a pair, stands on a tripod composed of three busts with helmeted heads; the looking-glass panele



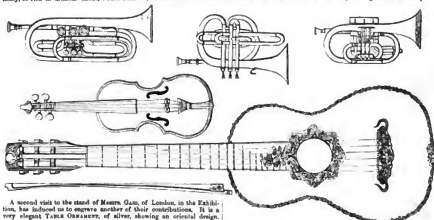
form the field on which is sculptured, in bas-relief, an ancient Irish kern, or light-armed warrior, on the one, and on the other, the Gallaghass, or heavy-armed Irish warrior.

THE INDUSTRY OF ALL NATIONS

It was reasonably to be expected that Germany, so rich in musical talent, would furnish

some examples of her skill in the manufacture of musical instruments. We have, therefore, en-

graved several from the establishment of Messrs. F. GLEN & SONS, of Klingenthal, in Saxony.



A second visit to the stand of Messrs. Goss, of London, in the Exhibition, has induced us to engrave another of their contributions. It is a very elegant TAMA ORNAMENTS, of silver, showing an oriental design.



Two Indian water-bearers are placed beneath a palm-tree, at each corner of the triangular base is a sphinx, between which is a wreath of flowers.

The three engravings which complete this page are selected from a



large variety of useful and ornamental articles, manufactured by Mr. T.



HARRISON, of Sheffield, chiefly in electro-plate on imperial metal and



nickel silver; many of these are designed with very considerable taste.

ART-JOURNAL ILLUSTRATED CATALOGUE.

On this column we introduce a Vase of silver for perfume, and a TAZZARA of silver gilt, from

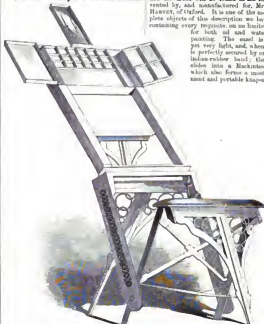


the manufactory of M. VITTON, of Paris; each of these objects are exquisite examples of the taste



displayed by the French designer in producing models for the manufacturer in costly metals.

A valuable auxiliary to the amateur sketcher



and the artist will be found in the Easel, invented by, and manufactured for, Mr. F. W. HARVEY, of Oxford. It is one of the most complete objects of this description we have seen, containing every requisite, on an limited scale, for both oil and water-colour painting. The easel is strong yet very light, and, when closed, is perfectly secured by one stout india-rubber band; the whole slides into a Mackintosh case, which also forms a most convenient and portable knapsack.

Mr. HARVEY, of Malpas, has furnished a pyramid of glass cases, containing the important and beau-

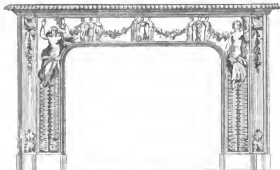


tiful devotional books for which he is celebrated as one of the most extensive continental publishers.

THE INDUSTRY OF ALL NATIONS.

A CHINESE PIECE of marble, designed and manufactured by Messrs. JOSEPH BROWN & Co., of London, is a well-executed work, from a light

and graceful composition, to which the two principal figures impart a novelty that is carried out by the ornamentation of the other parts.



THE BRONZE FOUNTAIN is the production of Mr. JAMES, of Lambeth, and is of very appropriate design, inasmuch as all the accessories are really,

and mythologically connected with the element it is destined to display. It is a small work, a model, in fact, but all the details are carefully carried



out, and it is worked by a miniature steam engine, of singularly excellent construction.

The Russian contributions to the Crystal Palace evince a large amount of costly splendour combined with quaint and characteristic design.



showing much fancy in the Art-manufacturers who have been engaged in their fabrication. In other pages of our Catalogue, many of the



larger Russian works appear; we have devoted two columns to specimens of the silver cups which occupy so important a position in the de-

ART-JOURNAL ILLUSTRATED CATALOGUE.

partment devoted to this great empire. There is a very free and faithful taste prevalent in



these articles, which gives to them a strong individuality of character. This is particularly



visible in the first and second of our engravings; the others, however, call to mind the German



works of the fifteenth century, to which they are nearly allied. They are the productions of the goldsmith, PAUL BAZZANO, of Moscow.

A CONSOLE TABLE, by M. JEANNEUX, of Paris,

is a good example of the Louis Quatorze style.



The engraving underneath is from the model of a SACRIFICIUM with GORME CASOT, sculpt-



tered by Mr. W. FLOW, of Foss Bridge, York, in

stone from the quarries at Haldenby, near Malton

THE INDUSTRY OF ALL NATIONS

The appended engraving is from a piece of
Ramoncourt, for a Priest's robe; it is manufac-
tured by MM. LANTIER & Fils, of Lyons; the
cross is worked in gold, upon a ground of purple.



A TABLE, of walnut wood, is another of the
contributions made by MR. PALMER, of Bath; it shows some bold carving, executed from a
design of considerable novelty, especially in the



form of the cross-piece connecting the legs. The
manufacturer is entitled to very high praise.

A statuary group under the name of "The
Sorrowful" is exhibited, with other works, by
MR. WILKIN, the distinguished sculptor; the
figure is presumed to represent a female in dis-
tress, who, with her infant, is soliciting charity.



The CHAIR introduced below is made by MR.
G. W. ENGLAND, of Leeds; it is manufactured



of mahogany, the grain of the wood running
in one uniform direction; the design is good.

ART-JOURNAL ILLUSTRATED CATALOGUE.

The sword here engraved is from the manufactory of Messrs. ELLYER, GIBBEY & Co., sword cutlers of Birmingham. It is a cavalry dress blade, the hilt, blade, and scabbard mountings of which are entirely of steel, elaborately engraved, in designs that show considerable suc-



cess of composition. The manufacture of these weapons from the rough metal to the finished object is highly interesting and curious, employing, as it does, a variety of workmen, each of whom must possess a greater or less amount of artistic skill and mechanical ingenuity to perfect his portion of work.

The subject of the above illustration is a CROWN FRAME, for a looking glass, manufactured by Messrs. GILLLOW, of London; it is a very elegant production

of its class, and a pleasing contrast to the Louis Quinze style so much in vogue, and which we should be glad to see superseded by one of greater simplicity.



In a former page of our Catalogue, we introduced an engraving from the front side of a BIBLE COVER, carved in boxwood, by Mr. W. G. HOSKIN, and exhibited by Mr. NISMET of London.

The engraving below illustrates the opposite side of the same book, which side is carved by Mr. ROGERS and designed by his son. Unlike the other, this contains no direct allusion to the contents of the sacred

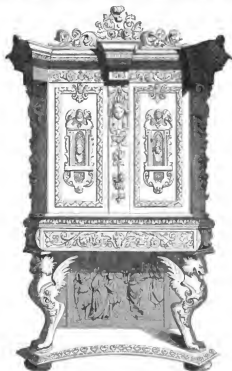


volume; the border is similar, but the centre ornament exhibits only a graceful arrangement of wheat,

grapes, and other devices. The execution of this work is exceedingly delicate and tasteful in all its parts.

THE INDUSTRY OF ALL NATIONS.

The CABINET here introduced is manufactured by Mr. HARRISON, of the Wood-carving Company, Pirbright, whose operations are conducted by a process of burning the wood into the required



pattern, so as to imitate carving. The cabinet is of oak and it shows some excellent work; the contributions of this establishment are numerous and exceedingly varied.



Messrs LLOYD & SCHNEIDER, of Birmingham, are the contributors of the productions in glass represented on this page. The group exhibits Jugs and a Vase; the former are richly

ornamented, while the latter possesses the pure outline of the antique without anything of a decorative character to detract from its simplicity.



the next is a WATER-JUG in the mediæval



style: the CLARET-JUG and decorated DRINKING-GLASSES show considerable novelty in design.



style: the CLARET-JUG and decorated DRINKING-GLASSES show considerable novelty in design.

ART-JOURNAL ILLUSTRATED CATALOGUE

The **FLOWER-STAND**, one of a pair, and **BRACKET**, in this column, are by M. FLEISCHMANN, of Bonnberg, in Germany; the latter object is of *paper macké*, from a very bold



design. The flower-stand is chiefly constructed of iron, modelled in a new way, and combined with *papier macké*, and covered with glass; it represents two vines, each with a bunch of



golden grapes. The pedestals consist of roots of iron thickly covered with grass and herbs.

The readers of the *Art-Journal* must be well aware of the interest we have always evinced in the welfare of the various schools of design established throughout the kingdom—institutions that we should not be destined to exercise an important influence on British Manufacturing

Art. The fruits of the exertions which are made for sustaining these schools begin now to be manifested in a way that must be very gratifying to all who, like ourselves, have advocated their establishment, and secured their property. One of these pleasing results is



developed in the **CABINET** here engraved, which is the work of A. HAYHALL, a young woodcarver of Sheffield, and educated in the school of design attached to that town. It is made of English walnut wood; the design is of the pure Italian style, abundantly rich in ornament, and free

from many of the monstrosities that too frequently deface similar productions; there is indeed scarcely a single part of the work open to reasonable objection. We understand that Mr. Hayhall undertook the task from a desire to uphold the character of the Sheffield School.

THE INDUSTRY OF ALL NATIONS

Messrs. DUNN & SONS, of Sheffield, are extensive manufacturers of silver and plated goods,

and in what is known as Britannia metal; we have engraved on this page a few of the numerous

articles they contribute to the Exhibition. In plain but truly elegant Grecian style adopted to the TUNERS and DUNS we have examples of the objects of ordinary use; and it is certainly not



appears in these designs. The silver and gilt TEA AND COFFEE SERVICE possesses considerable novelty in form and composition; the various pieces are modelled from the pitcher-pot, and the waiter on which they are placed from a leaf



of the Victoria Regia. The COFFEE POT on this column has a floral ornament in high relief; the CAFE PLATE is modelled as from a single leaf, in



a little refreshing to the eye, somewhat over-weighed with the constant recurrence of the



an elegant form; and the POWDER FLASK, which concludes the page, shows an embossing in the Italian style, forming a frame and displaying in



elaborate and often over-decorated patterns of the Italian style, and those founded upon it.

The absence of a plethora of ornament is amply atoned for by the simple beauty of that which



the centre a group of dead game. The flask has a stopper, very ingeniously and effectively contrived to facilitate the sportsman in loading his gun.

ART-JOURNAL ILLUSTRATED CATALOGUE

The TABLE, manufactured by Messrs. JONESTON & JAMES, of London, is circular, and made on the expanding principle; by a simple process, the extension of which the top is composed draw out,

and sectional pieces being introduced, the table is increased to double its original size. The tripod is very massive, it looks disproportioned as seen in the engraving, but not so when the table is expanded.



The GARDEN FURNITURE introduced underneath is from the establishment of Messrs. SWELL & Co., of London. As might be expected, the invitations to exhibit have been answered by contributions from the most eminent cabinet-makers in Great Britain and on the continent, each of whom appears to have striven worthily in the production of works

calculated to uphold their own individual reputation, and that of their respective countries. The CABINET and GLASS are much to our taste; the frame of the latter is especially good,

A model, in bronze, of a FOUNTAIN is exhibited by M. GLASER, of Vienna; it would be highly effective on a large scale.



and possesses novelty. The oval TABLE has a rich marquetrie border, and the other objects that appear in our illustration deserve attention.

THE INDUSTRY OF ALL NATIONS.

The BROOCH engraved underneath is manufactured by M. REDOUX, of Paris; the design of the beautiful setting is of the Renaissance period.



The city of Lyons, so might be expected, contributes a large, varied, and costly supply of the silk manufactures for which she has long been celebrated throughout Europe. It is not our province, here at least, to institute comparisons between the productions of France and those of our country; but we may nevertheless be permitted to add that, unfortunately for our own manufactures, fashion has arbitrarily set a value upon the fabrics of the continent, to which they

The group, by M. LECHEMAN, of Paris, which is termed THE FAITHFUL FRIEND, is remarkable for the vigour with which the story is told by the



sculptor. A boy is accompanied by his dog, both are attacked by a serpent, but the faithful animal is on the defensive, and deters the reptile.

are not always entitled. Of the two illustrations on the lower part of this page the first is from a piece of RICHON, made by Messrs. COLLARD & Co., of St. Etienne; the pattern is simple, but



strengthened with considerable grace. The second is from a silk BOARF, which presents a combina-



tion of elegant and novel forms most skillfully composed; it is a superb fabric from the manufac-

tory of Messrs. BERTRAND, GAYET, & DUBOUTAT of Lyons, an establishment of high reputation.

ART-JOURNAL. ILLUSTRATED CATALOGUE.

This group—THE DELIVERER—is a sequel, by

M. LECHEVRE, to that which we engrave on the opposite page. The dog has destroyed the aggressive serpent, and is receiving the caresses of the boy who has been saved by his prowess.



We introduce here another BACCHUS by M. RICHOUX, of Paris; it is an exquisitely delicate piece of workmanship; the mounting shows the leaves and bunches of grapes, elegantly arranged; the centre is a very charming enamel painting.



The engraving underneath is from a piece of SILK DAMASK, made by Messrs. MATHEUX & BOUTARD, of Lyons; the design is truly excellent.



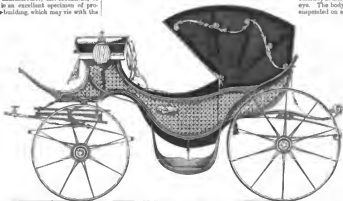
The velvets of Lyons are no less distinguished by beauty of fabric than the silks manufactured in the same place; we engrave here one of the costly FIGURED VELVETS made by Messrs. MATHEUX & BOUTARD.



THE INDUSTRY OF ALL NATIONS.

The Carriage, or "Pileatum," as it is designated by the manufacturer, Mr. McLENNAN, of Northampton, is an excellent specimen of provincial carriage-building, which may vie with the

best of metropolitan manufacture; the panels are painted to resemble case-work, and so successfully as almost to deceive the eye. The body of the vehicle is supported on elliptical springs.



We introduce here two engravings from the manufacture of Lyons, the first is a cloth of silk, called "Drap d'Or," made by Messrs. MATHIEUX & BOUYARD; it is an exquisitely beautiful fabric, in which the design and its arrangement are equally good, while the gold and colours weaved into

it present a most rich appearance. The second is from the manufactory



of Messrs. LA MIRE & SONS; it is a piece of gold brocade, showing great originality in the disposition of the pattern, which consists of flowers,



both wild and cultivated, mingled with ears of rye-corn, bound together.

ART-JOURNAL. ILLUSTRATED CATALOGUE

M. BOUTÉ, of Antwerp, a wood-carver of em-

ness, who has been employed by his Govern-
ment in the reconstruction of the ornamental
Gothic wood-work of the walls of Antwerp
Cathedral, has sent some of his beautiful works
in furniture to the Exhibition. A Gothic side-
board is a fine specimen of his art, in which his
knowledge of the style and power of treating it,
fully prove how wisely the choice of his Govern-
ment has fallen on him. The BUREAU we en-
grave is a more free and fanciful work in the
Italian style: it is carved in ebony, and is very
boldly and beautifully wrought,—a work that

reflects the greatest honour on its fabricator.



From the Sherwood Iron-Works, situated at
Mansfield, Mr. F. WATKINS, the proprietor,
has sent a variety of stoves, and some other ex-
amples of metallic work. We introduce here

a specimen of his design for wrought-iron
RAILINGS, exhibiting a pattern equally novel,
artistic, and effective for its purpose. The
STOVE-GRAVE, as it is termed by the manufac-

turer, is a laudable attempt, successfully carried
out, to produce a classic and simple style of
ornament, in combination with a new and
effective mode of diffusing heat throughout an



apartment, a desideratum too often lost sight of
in the construction of stoves and grates; that
here engraved is of highly polished steel, beau-



tifully wrought. Among other manufactures
contributed by Mr. Watkinson, but which are
not altogether suitable for our pages, are various

roasting apparatus, adapted to the rooms of
the three grades into which the community is
generally divided, the higher, middle, and lower.

THE INDUSTRY OF ALL NATIONS

From the very few examples of Russian furniture, which appear in the Exhibition, we have selected a **CABINET**, manufactured by M. GANN, of

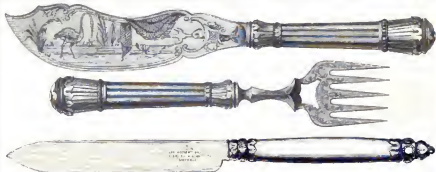


St. Petersburg; it is made of tulip-wood, ornamented with bronze and inlaid with porcelain. The design is good, simple, and without pretension.

The **CANDELABRUM** is one of a pair, also from a Russian manufacturer, M. KUCHRADEL, of Moscow. They are of bronze, gilt; the height of the



pedestal looks a little disproportionate to that of the shaft; in all its other parts the design is unexceptionable, and, in some respects, original.



Messrs. J. ROSSIGNOL & SONS, of Sheffield, are the manufacturers of the **FISHING-KNIFE** and **FORK**, and **DAMASK-KNIFE**, which appear above. The

blade of the first-named shows an engraving of a subject that is suggestive of the intended use of the article itself; a fisherman is standing

in a stream, surrounded by aquatic plants, while a fishing-net is tastefully brought into the composition. The handles are simply designed.

ART-JOURNAL ILLUSTRATED CATALOGUE.

Mr. F. M. MILLER exhibits a bas-relief, the subject being from "Cupid"—and exhibiting THE ATTENDANT SPIRIT descending on a glancing star. It is a group

fully conceived rendering of a highly poetic image, and reflects honour on the young sculptor who has so successfully executed it. We hope to see it in marble.



The LUSTRA, engraved below, is intended for the display of sixty lights, and is manufactured by BENNETT & HENNINGSEN of HANNOVER. It is very sumptuous in its execution.



richments, and good in general design. The contributions from Northern Germany are not large, but the present is one of the

best, and may be suggestive to manufacturers at home, who sometimes display too much floral ornament in works of this class.

Mr. J. E. JOHN exhibits a portrait-stone which he terms "THE FAVORITE," in allusion, we presume, to the dog, upon which the left hand of the lady reposes so trustingly, and which appears to return her confidence.



with a due amount of attachment on his part. There is a natural simplicity about the figure that renders it extremely pleasing; the drapery is tastefully disposed, and the entire composition is altogether graceful and attractive.



One of the parquetage floors by M. LENTNER of VIENNA: the woods are of various tints, from the white lime to the dark rose-wood; they give variety and beauty to the pattern.

THE INDUSTRY OF ALL NATIONS.

A STATUARY GROUP, modelled by Mr. JOHN BAKER, of London, is a highly spirited production. We presume it to be the dying Marston of Sir Walter Scott, shaking the "fragment of

his blade." We have frequently thought this a good subject for the sculptor, and should like to see it carried out on a large scale. Mr. Barker's group is small, but it tells its story effectively.



A SILVER SKEET-BOTTLE is another of the contributions of M. HIRSGART, the eminent silversmith of Paris, and, like all the works produced by him, it manifests a pure feeling for art.



Every visitor to the Austrian department of

the Exhibition, will at once recognise the annexed engraving as the magnificent oak BOCK CASE, manufactured by M.M. LEUTNER & SONS, as a present from the Emperor of Austria to the

Queen of England. The work is well worthy of



the Imperial donor and the Royal recipient, while

it does infinite credit to those who have produced

it. The Gothic carving is beautifully decorated.

ART-JOURNAL ILLUSTRATED CATALOGUE.

In a former page of the Catalogue we introduced several engravings from the jewellery manufactured by Messrs. WATKINSON & BROS., of London; we are induced to devote

another page to the contributions of this firm, principally for the purpose of giving an illustration of the magnificent Vase of gold, jewelled and enamelled, which occupies so prominent a

position among their works in the Exhibition. It is designed by Mr. Alfred Brown: the group surrounding the cover represents the United Kingdom as symbolized by the figures of Britannia, Scotia, and Hibernia, around the edge of the cup are four bowls emblematical of the four quarters of the globe, in all of which Great Britain possesses colonies. Below these are



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festoons of diamonds, representing the rose, shamrock, and thistle; and, surrounding the body of the vase, are rubies, which express the ancient progenitors of the British nation; other appropriate devices are introduced. Still



lower are two figures of Fame, crowning England's most renowned warriors, poets, and men of science; while, on the lower part of the cup, as an expression of British character,



are the figures of Truth, Prudence, Industry, and Fortitude. The vase weighs ninety-five ounces, and is richly decorated with diamonds, pearls, rubies, caruncles, sapphires, and emeralds, relieved by a cinque-cento ornamented ground, in enamel. The work is surpassed by nothing in the Exhibition, in reference either to design or execution. The Rosettes engraved on this column are elegant specimens of jewellery.



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THE INDUSTRY OF ALL NATIONS.

The Gallery of Art exhibited in the Austrian department has attracted great attention since the Exhibition first opened, and it has continued throughout to be one of the most crowded portions of the building. This is due so well to the excellence of the works exhibited, as to the striking peculiarities which some of them display: such as the "Velvet Vestal," purchased by the Duke of Devonshire, or the BASKET BAGGAS, by GAYDOLFI, of Milan, which we here engrave. The veil over the face is so rendered as to appear transparent; the fingers are also dimly seen through the thin drapery that covers the hands of the figure.



Messrs. MISTON & Co., of Stoke-upon-Trent, Staffordshire, exhibit some excellent FLAMEN VASES, coloured after the style of the old Romans. The quiet tone of



colour he has adopted for their fanciful surfaces evinces the very best taste.

Mr. WEST, of Dublin, an eminent gold and silversmith of that



city, exhibits a variety of BROOCHES, made after the fashion of



those worn by "the daughters of Erin" some centuries ago.



That at the foot of our page is an entirely new design, and is the



brooch presented by the people of Dublin to Miss Helen Forth.

ART-JOURNAL ILLUSTRATED CATALOGUE.

Another of the most extensive diversities and jewellers of Paris, M. GUERIN, contributes to the Exhibition a very large variety of his manufactures, consisting of almost every descrip-



tion of bijouterie and vases. We engrave on this page a few we have selected from the many. The first is an unique ORNAMENT for the corner of a



book cover; next follows a HAND LOOKING-GLASS of very elegant pattern. The BRACELET on the top of the page is a beautiful specimen of jewellery, with its winged figures supporting the

centre ornament. The large engraving is from a PERFUME VASE, in which the handles are not

less distinguished by novelty than by good taste, though they may here seem somewhat too large;



the body is ornamented with an embossed running pattern of oak-leaves, acorns, argemone



plants, and fish; the lid is surmounted by a vulture, which seems ready to pounce on the



pevy beneath. The CASKET is an admirable specimen of the cinque-cento style: the pattern is engraved with much delicacy, while the figures of the key-embellishment are in bold relief.

The establishment of M. Omer ranks among the largest of the silversmiths in Paris. The visit we paid to France in the autumn of the past year afforded us an opportunity of inspecting the immense stock of manufactured articles



displayed in his show-rooms; and we trust do M. Omer the justice to say that his productions do him infinite credit in every way. We fill this page with five engravings, selected from his important contributions to the Exhibition; the



reader will receive gratification from the novelty presented by the major part of them. Our first example is from a *Corvus* Por., of very elegant form and ornamentation. The *Corvus* underneath is of exquisite workmanship; the figures on it are modelled with much freedom

and truthfulness; the *Scorpius* ornaments on the handles are novel. The next subject is



composed of fish, and objects appertaining to the sport of angling, and the sides of the ink stand are in harmony with them. The two *Turkeys* and *Ducks* that make up the remaining



illustrations are widely dissimilar, but each presenting features of beauty and novelty (we are compelled to repeat the last word once more) that cannot fail to attract attention; the former,



though richly engraved and sculptured, presents in its ornaments a unity of idea, that seems wanting in the latter, which, nevertheless, is a magnificent piece of sculptured silver work.

THE INDUSTRY OF ALL NATIONS.

The group of Diamond SERVICE is contributed by Messrs. DANIELS, of London: it is remarkable



The figure engraved underneath is from the statue of the FUGER BOY, by HENRY FUGER, the distinguished American sculptor: it is a work in every way worthy of its high repute.



not alone for much grace and elegance of design, but as a triumphant attempt to restore to fictile art the once famous rose colour, named after the favourite of Louis Quatorze, "Du Barry." In the works exhibited by Messrs. Daniels, and manufac-

tured at Coalbrookdale, this beautiful colour is unquestionably improved upon: it has a far finer and richer tint, and perhaps may be regarded as one of the triumphs of the Exhibition. The PASTEL VASE is also a contribution by Messrs. Daniels.



The eminent sculptor, GIEFF, of Antwerp, contributes a group designed from the old and

beautiful national legend of GENEVIÈVE OF BRABANT, who, wrongfully accused of infidelity, is



driven by her lord to the wilds of the forest, where she and her infant are encountered by a fawn until her innocence is established, and she

is again sought by her deceived husband. The story is simply and touchingly told, and the group well composed by the accomplished artist.

ART-JOURNAL ILLUSTRATED CATALOGUE

The two objects which form the illustrations on the upper portion of this page are produced by Messrs. WERRY & PARLEY, of London, who carry on an establishment for the manufacture of ornaments in composition, principally for the decoration of rooms, but also, as our engravings show, for the lighter description of furniture. They exhibit the model of a room, as prepared for the gilder, painter, and upholsterer, with



In an earlier page of the Catalogue we introduced two single examples of the *BIJOUX* of M. FAHLEND, of Paris; we now bring forward a GROUP, composed from his numerous contributions in the Exhibition. In the centre is a noble Vase, of porcelain, in the *Louis Quatorze* style, with bronze ornaments, festoons of flowers, and

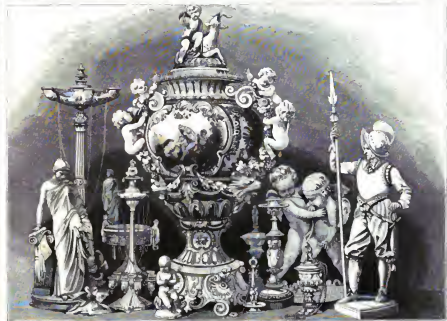
groups of other productions, which must be regarded more as models than as finished works. The TABLE is one of such; it has long pendent leaves



ornamenting the columns. The *LADIES' WARE* TABLE is very elegant in design; its style is Italian, well arranged in all its various details.

figures. To the right is the well-known group of the "CYTUS STRUGGLING FOR THE HEART."

The remainder of the composition is made up of statuettes, candelabras, vases, and other objects.



THE INDUSTRY OF ALL NATIONS.

One is apt to associate the manufacturing productions of Manchester with cotton and calicoes, as to find some surprise to see an exhibition of beautiful Glass Ware emanating from that busy town. The engravings introduced on this page sufficiently testify to the position which the "metropolis of the north" may assume in the manufacture of useful objects; moreover, it is not generally known that not less than twenty-five tons of flint-glass are, at



the present time, produced weekly in Manchester, where the establishment of Messrs. Mather, Platt, & Co., takes the lead in this department of industrial art. This house has now existed for nearly a quarter of a century,

and its proprietors have paid such attention to the production of ornamental coloured glass,



that it may be affirmed, without prejudice to

a ROGEE-BARTY, of cut prism; by its side are a Grecian-shaped ruby jug, and GOSLET to correspond, with richly-cut work diamonds; in the centre of the third column is a ruby gilt Chalice,



in the medieval style. The splendid Vase at the bottom of the page is engraved after Flax



man's design of "Dionysos casting his spear at Mars;" and in the middle of the group to the



other manufacturers in localities where such business is now carried on, that the Manchester



glass is in no way inferior to the best in the country. The first object we have engraved is



left of this are a ruby antique JUG and GOSLET, on which has been engraved the lotus-plant.

ART-JOURNAL ILLUSTRATED CATALOGUE

The Duchy of Saxe-Coburg has made great exertions to be worthily represented in the Exhibition. This might be looked for from the con-

nection existing between that country and the Prince who has rendered such efficient service in bringing the vast industrial display to its

present satisfactory condition; the land of his birth would naturally feel a double interest in doing her best to second his laudable efforts.

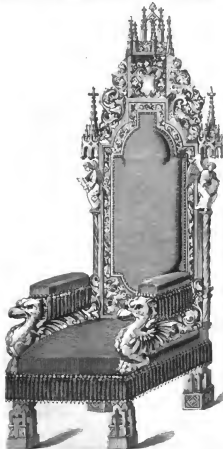


Hence we find, among her numerous contributions, many valuable natural productions, and a

large variety of manufactured objects, of a useful and a decorative character. We introduce on this page examples of the wood-carving of Saxony, and a decorative character. We introduce on this page examples of the wood-carving of Saxony, consisting of



portion of an oak *Rosenbaum*, executed in the German-Gothic style of the middle age, and



one of a series of four *ARM CHAIRS* to match. The *CHRONICLE* at the top of the page is the

upper part of the *CANOPY* seen underneath. The workmanship of these objects is exceedingly good.

THE INDUSTRY OF ALL NATIONS.

The illustrations on this page form a portion



of the contributions from Malta, and are from



the sculptured works which have made the



Maltese department an attractive part of the

Exhibition. The artists whose taste and skill have wrought out these truly beautiful productions are M.M. DUCCHINO, DURELL, BOLAN, & SON.

There; we place them together because we have selected our engravings almost indiscriminately from their contributions, and because we consider them of equal excellence. Our space, moreover, precludes us from entering upon any



particular description of each illustration; it will be sufficient to remark that the mantles of some of the old Italian masters seem to have fallen on the shoulders of these Maltese sculptors, who exhibit so much "exquisite workmanship" in their art. We would instance, as examples of rich and bold sculpture, the Vase with eagles, and the vase with the lion, on the first

column, the former by S. Tessa, and the latter by J. Bolan; while, in the whole of the Illustration, the elaborate ornamentation of the Italian school is abundantly manifest. While we confess that our taste inclines more to the simplicity and elegance of the Greek compositions, we most readily award to these all the merit, and it is undoubtedly great, which belongs to them.



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ART-JOURNAL ILLUSTRATED CATALOGUE.

The gracefully-conceived group of **EVE NURSING THE INFANT CAIN AND ABEL**, is by **EGGERS LE BAY**, a French sculptor of eminence; he has given it the title of "**Le Premier Sermon**," a



poetic term, appropriately applied to the group he has so tastefully designed and so well executed.

The **RAZORS** contributed by **MR. FENNER**, of Sheffield, are remarkable for the enriched character of the blade and handle; the former being a novelty with which we are but little



most extensive and meritorious in the kingdom; the whole process of forming the razor, from the rude materials of iron, horn, ivory, and tortoise

shells, is there conducted, and few since interested the whole process of forming the razor, from the rude materials of iron, horn, ivory, and tortoise

ing works are to be seen in the superlative of the steel fabricants with which Sheffield abounds.



The very elegant **COCOON BOX** engraved below is exhibited by **MESSRS. ACKERMAN**, of London, whose names have been so long associated with

the Fine Arts. The outer bands and outlines of the running decoration are of gold, the flowers pink; the ground pale blue. The darkest parts

of the ornament are of a deep grape colour, producing a rich and chaotic effect. The box contains an extensive assortment of drawing materials.

ART-JOURNAL ILLUSTRATED CATALOGUE

"THE UNHAPPY CHILD" below is the work of M. REMON, of Brussels, a companion figure to "The Happy Child," which we have also engraved. The boy has broken his

drum, and, in a violent fit of temper, has kicked his clothing about his feet till they have become entangled, and add to his exultation of rage. The work is most truthful.



THE DANISH CURTAIN is also by MIMMA, T. ACHNOY & SONS, of Halifax; it is very

rich in colour, the flowers being white, the leaves and ornaments in various tints of



orange, on a ground of deep crimson. It is a very successful and artistic production.

quite worthy of being placed beside the best works of this class in the Great Exhibition.

THE TESTIMONIAL CUP, of silver, by Messrs. GARRARD, of London, is a most spirited and artistic work of its class.



A graceful statue, by PUTHIARI, of Milan, which he



terrace MORNING PRAYER, is full of the best feeling generated by the shrine of a subject replete with sentiment.

THE INDUSTRY OF ALL NATIONS

The importation of foreign Watches into England is carried on to a considerable extent,

although, we believe, that since our manufacturers have learned to combine elegance with

excellence, a large distinction has taken place in the number imported. The watch-makers of Switzerland have long maintained their pre-



A CHEVAL SCREEN, carved and gilt, is exhibited by Mr. T. NICOLS, of London; it is so



constructed that by a simple process it may be converted into a stand for lights, a mirror-stand,



eminence in this branch of industrial art by the ingenuity and skill which they have brought to bear on their productions; so that the watches



of that country find a ready sale throughout the continents of Europe and America. We have engraved on this page six out of several which



M. PAYER, of Geneva, has contributed to the Exhibition. By a simplest ingenious mechanism, the use of watch-keys is rendered unnecessary in



some of them; a screw is the handle, when turned, winds up the watch, and, by another movement, equally simple, regulates the hands.



and a table. In the centre is a Paul painting, by Mr. A. Blackley, representing Peace and

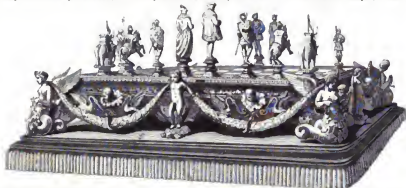
Forty; the composition of the picture is lightly pleasing, while the design of the frame is good.

ART-JOURNAL ILLUSTRATED CATALOGUE.

A CHESS BOARD AND CHESS-PIECES, in silver and gold, richly ornamented with jewels, enamel, &c.,

is exhibited by MESSRS. PHILLIPS, of London, but made by Messrs. C. M. Wachsaupt and Sons, of

Hann. Germany. The figures were modelled by M. E. Von Lantzke, the sculptor, of Frankfurt.



The female figure is from one of the "Queens" in the set of Chess Men; she is habited in the

A Statue, in plaster, entitled "THE BATHER," is exhibited by Mr. J. LAWLER, a clever sculptor,

One of the "Kings" of the Chess Men is here introduced, whose costume is in harmony with



costume worn in the early part of the sixteenth century by the royal princesses of Germany.



who has executed several excellent productions.



Its companion on the opposite side. The whole of this work is singularly unique and beautiful.



The above engraving illustrates the lower portion of the CARVED FRAME, of which we gave the upper

part in a preceding page. It is carved by Professor ALBERT, of Berlin, from a design by H. BATES.

ART-JOURNAL ILLUSTRATED CATALOGUE

HAARLEM, on the next page is another example of the Louis Quatorze style, and the Cur that



follows it shows that of the Renaissance to great



advantage: it is exceedingly graceful in form

The annexed engraving is from one of the few ornamental objects of industrial art contributed by the Swiss Cantons; it is a lady's RECRUITURE, manufactured of white wood by M. WETZEL, of Berne, and is so constructed that it may be used at pleasure for a writing-table in a sitting or a



The CARPET underneath is manufactured by M. FOURDINER, of Paris; the material of which it is made is ebony, the moulding and ornaments

standing posture. The ornamentation is unique and characteristic; the figures which appear in the different parts represent the rustic economy and Alpine life of the inhabitants of Switzerland; many of whom, while tending their flocks, amuse themselves with carving various objects.

are of brass gilt, the panels of tortoiseshell, inlaid with burl. In this, as in many other objects of French cabinet-work, we cannot but



notice the purity of style that exists throughout the entire design, by which its true nature is so much enhanced. Ornament, like extravagant

colouring in a picture, only attracts observation to its defects, unless it be accompanied by taste in its selection, and great skill in its adaptation.

THE INDUSTRY OF ALL NATIONS.

The light PRÆTOR, by Messrs. BROWN, OWEN, & Co., of Birmingham, possesses all the requisites of conven-

ience and elegance which characterize modern carriage-building in England: the shafts are made of steel.



The SHAW, by Messrs. KIRK & SON, of London, is a tasteful and elaborate design, remarkable for harmony of colour, as well as for intricacy of composition. It is priced by Mr. Swales, of Croydon.



The noble old romance, the "Nibelungen Lied," has furnished PERD



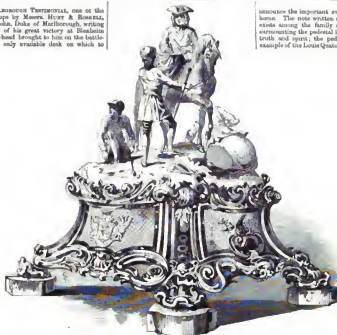
ROCK with subjects for characteristic



statues, executed in bronze at the foundry of the Prince of Siam, at Vienna.

ART-JOURNAL ILLUSTRATED CATALOGUE

THE MARLBOROUGH TESTIMONIAL, ONE OF THE striking groups by Messrs. HUNT & ROSKILL, represents John, Duke of Marlborough, writing the despatch of his great victory at Blenheim on the drum-head brought to him on the battle-field, as the only available desk on which to

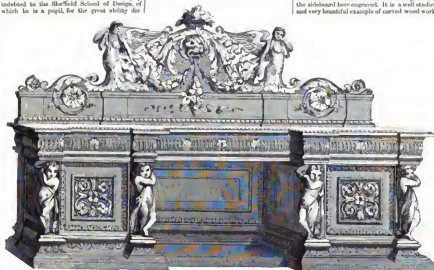


announce the important event to Englishmen at home. The note written on this occasion still exists among the family archives. The group surrounding the pedestal is modelled with great truth and spirit; the pedestal itself is a bold example of the Louis Quatorze style of ornament.

A SIDEBOARD, carved in walnut-wood, is the entire work—design and execution—of Mr. H. HOYLE, of Sheffield, a young man who is largely indebted to the Sheffield School of Design, of which he is a pupil, for the great ability dis-

played in this production. It has been executed under considerable difficulty, the producer

having to labour at one of the manufactories in the town three days in the week for his maintenance, while he devoted the remaining three to the sideboard here engraved. It is a well studied and very beautiful example of carved wood work.



THE INDUSTRY OF ALL NATIONS

The CHAIR engraved below is made by Mr. G. COLLINGS, of Dorchester. Independent of its merit as an example of rustic furniture, there is a little history attaching to it, which enhances its interest. About three years since, two oak trees, measuring together two hundred feet of timber, were found below the floor of the river

Dan out-fall drain, then being dug at Arksey, near Dorchester, by Mr. W. Chadwick, of that place, for whom, we believe, the chair has been manufactured. It is presumed, by those acquainted with the locality where these trees were found, that they must have been buried in the soil upwards of two thousand years.



The engraving underneath represents a portion of a CARPET, manufactured by Mr. B. H. WOODWARD & Co., of Kidderminster, and designated

a "Brookman carpet." The advantages which we understand this peculiar fabric offers, are warmth, cleanliness, and durability; the capa-

bility of being made either in Brussels, Tourney, Wilton, or velvet-pile qualities; and facilities



for change of colours in the same design. The pattern we have engraved is one especially adapted for effecting these durable results.

ART-JOURNAL ILLUSTRATED CATALOGUE

The illustration placed across the top of this page represents the upper part of a **FRESCO**, carved by Professor **ALBERTI**, Member of the

Berlin Academy of Arts, from a design by M. Schuler, principal architect to the King of Prussia. The design is successfully executed.



The **CABINET**, which appears beneath, is executed from one manufactured and exhibited by Mr. J. W. INGRAM, of Islington, Birmingham; it is made of wood, decorated by the enamel pro-

cess, with electro-gilt metal mouldings, forming

a choice and somewhat unique object of cabinet work. The decorations are of a description to tell more effectively in the original, than in any illustration, however carefully executed.



The **FRESCO** is another of those exhibited by

Messrs. ROSSIGNOL, CARR, & SONS, of Sheffield, and, like most of the productions of this firm, is characterized by a judicious combination of sto-

gance with utility: it is of polished steel.



THE INDUSTRY OF ALL NATIONS.

A Window of stained and painted glass is exhibited by Mr. G. HEDDERLEY, of London; its style decorated with the fabric architecture; cut out with reference to



tion of that style, as existing in the last examples of ecclesiastical decoration. The work is, in all respects, one of considerable merit.

The engraving underneath is somewhat of a deviation from the plan we have adopted with reference to machinery of every description; but the Mill here represented may be accepted as proof, that even to machinery may be given elegance of form and character. The manufacturers are Messrs. S. ADAMS & Co.,



of Oldbury near Birmingham, whose object has been, in their invention, to construct a mill, more durable, yet not more expensive, than those in ordinary use.



A LACE SHAWL is manufactured by Mr. W. VINCEN, of Nottingham, from what is termed the "punter bobbin set machine"; the work is exceedingly delicate.

ART-JOURNAL ILLUSTRATED CATALOGUE

Mr. FRYE, of London, whose mountings for carriage harness we have engraved elsewhere, exhibits some elegant heraldic harness; the handle of one is seen illustrated underneath.



Among the beautiful shawls and scarves exhibited by Mr. BRACKLEY, of Norwich, of whose contributions by the way, we gave specimens in an earlier number of our Catalogue, is an elegant Scarf of Cashmere, of which a portion is here engraved: in its simple yet elegant design, and



in tasteful arrangement of colour, it is every thing to be desired. We understand the scarf has been purchased at the Exhibition by the Queen.

Mr. SAWYER, of London, exhibits some very beautiful WHIP-HANDLES, displaying an amount



of fancy and picturesque applicability to their uses which evince a well directed taste and



judgment, and show how thoroughly artistic the most ordinary article of use may be made. An



UMBRELLA-HANDLES and PARASOL-TOPS concludes our series, which exhibit much originality.

The exhibition of LADEN FANS by M. DE VILLERS, of London and Paris, is unique; all that taste and ingenuity can devise in the way



of ornament may be seen among the variety contributed, any one of which is worthy of the ladies who graced the courts of Queen Anne or Louis XIV., to whom fans were always indispensable.

THE INDUSTRY OF ALL NATIONS.

A decorative picture for a CHILDS is exhibited by Mr. HEAVES, of London. Britannia is personified in her Sovereign leading on Peace, and supported by Religion. She presides at the

convention of Agriculture, Commerce, Science, and the Arts, and has called around her the

representatives of all nations. The genius of Immortality bears a crown to Britannia, and other great office joins to the various representatives of the Industrial Arts: it is a spirited composition.



The two objects underneath are from the productions of MESSRS. MARRE, Frères, of Paris: one is a MINIATURE FRAME, in gold and oxydized



silver; the other a large Vase with silver ornaments, executed for the Duc d'Angoulême.

ART-JOURNAL ILLUSTRATED CATALOGUE

The annexed illustration is from a CAMBRIE DRESS, manufactured by Messrs. T. GARNETT, Brothers, of Halifax, by direction of Prince Albert, for the Queen. It is made from the worst of a favourite goat, belonging to her Majesty. The design, which is simple but elegant, is by Mr. G. Osely.



Messrs. CLARKE & Co., of Norwich, exhibit a large variety of the textile fabrics for which this city is famous; showing, poplin, breccias,



hunting wrappers, &c. We engrave here one of their FORTIN patterns, of an exceedingly neat and pretty design, that is most effective in the fabric.

Mr. THURSTON has realized the tale of the youthful KING ALFRED TAUGHT BY HIS MOTHER, who places the illuminated book before him as an inducement to cultivate that knowledge, for which he ultimately became conspicuous; the composition of the group is spirited and clear.



The FIASCOFON here introduced is manufactured by M. PARR, of London.



don, Paris, and Brussels; it is made to serve as a table when shut down.

THE INDUSTRY OF ALL NATIONS.

A SILVER is termed by Messrs. R. & S. GARRARD, the manufacturers, "The Great Railway Silver;" it being a testimonial presented to Mr. Brassey, (the famous and universally-respected railway contractor) by

the sub-contractors and workmen in his employ. It is of silver, and in the compartments around are enameled portraits of the chief railway engineers; above each, respectively, is a view of his principal work.



We have already had occasion to notice the contributions of Messrs. FARRAN, of London, who exhibit various works in iron of a very artistic kind; we here en-

grave one of their principal works, a fine piece of great beauty, displaying a large amount of ornament of a well-told character. The sides are decorated with elab-

The GROUP OF STATUARY is a most spirited production, by M. JARICHAU, of Copenhagen. It represents a man



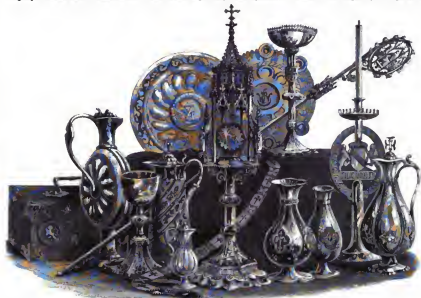
der-riding himself from a tigress, whose cub he has taken.



of china designed in an elaborate interlaced pattern, enriched with coloured studs in raised work, similar to the old jewelled porcelains.

ART-JOURNAL ILLUSTRATED CATALOGUE

The group of ECCLESIASTICAL VERMIL, &c., are | selected from a large variety of those quaint and | beautiful works, designed by Mr. Pugin, and exe-



cut by Messrs. J. HARDMAN & Co., of Birmingham; | have. They fully realize the style and artistic | feeling of the best works of the middle ages



The CABINET here engraved is one of the most | important pieces of furniture in the Medieval | Court; it is executed by Mr. CRACK, of London.

ART-JOURNAL ILLUSTRATED CATALOGUE.

The engraving on this column is from an ornamental *fontaine*, modelled by M. COURMAN KRAUS, of Munich, and intended to be cast in bronze. It is in the true German style of the earlier period.



The contributions of M. FROBERG-MYER, of Paris, include a magnificent *BRACHLET*, presented by subscription to her Royal Highness the Countess of Chambord, one of the old Bourbon

The merits of Mr. W. HARRY ROGERS as a designer we have long recognized, and have repeatedly availed ourselves of his talents in connection with our *Journal*; we were, therefore, pleased to see in the Exhibition a large number of ornamental works, manufactured from the designs he has furnished to the producers, as well as many subjects from his pencil applicable to future manufactures. Whatever Mr. Rogers puts forth is characterized by the purest taste, a taste which is fostered by an intimate acquaintance with the best works of the medieval ages. We introduce here a design for a *KEY*, in the Italian style; other illustrations from his hand will be found on the last page of our Catalogue.



family, by the ladies of Marseilles. In the

The engraved illustration is also from a *GOSSET*, modelled in plaster of Paris, by M. J. HALLER, of Munich; it is in the German Gothic style.



centre are the arms of the city, surmounted by a mural crown; on each side are portraits in enamel, of characters celebrated in the history of Marseilles, supporting a warrior in the



costume of the period, and a female, also accoutred, as indicative of the courage displayed

by the women of the city when it was besieged

in 1564. This unique article of jewellery is executed in the highest style of ornamental Art.

THE INDUSTRY OF ALL NATIONS.

The engraving underneath represents a *CHIEF*'s
Rosa, of muslin, richly embroidered, from the

extensive manufactory of Messrs. B. & T. BROWN,
of Glasgow; the pattern is elaborate and beautiful.



A *DRESSING CASE*, made of yew-tree wood, is
exhibited by Mr. SPENCER, of London. The



mountings are of silver, designed in the antique
style, and the articles correspond in character.

Among the statuary in the Sculpture Court,
stands Mr. THOMAS's life-size statue of *NASCOUR*;
he is represented leaning on his hunting-spear,
and contemplating his reflection in the stream.



Messrs. MANASS, Friars, of Paris, exhibit,
among other objects, a beautiful *Vase*, of gold



and enamel, designed in the purest Venetian
style, and most artistically executed throughout.

ART-JOURNAL ILLUSTRATED CATALOGUE

The Jewels of the Queen of Spain are exhibited by M. LEROUX, of Paris: we have engraved such of them as we consider most suitable for



illustration; it is almost unnecessary to add that all are of the most costly



description, and exquisitely set. Our first illustration is a TIARA, or



head-dress, of sapphires and diamonds; the next is an ORNAMENT for the

head, of emeralds and diamonds, most elegantly arranged as a bouquet; an AIGUILLETTE, or shoulder-knot, of diamonds, pearls, and a large emerald foliote, by the side of which is a BRACELET, of pink pearls and diamonds; a BRACELET, of emeralds, and diamonds, completes the series.



Among the most successful productions in decorative furniture contributed by continental artists may be claimed the TABLE and CHAIR we here engrave, and which are designed and executed in strict accordance with classic models; indeed there is no portion of these articles without



strict adherence in form and enrichment to antique authority. Ebony and ivory enter into their material as lavishly as they did into the furniture of the higher classes of Greece and Rome. They have been executed for the King of Sardinia by G. CAPELLA, of Turin, and are deserving of a



place in the palace of any sovereign. The Curule Chair is a really fine work, graceful in its general form, and enriched by the ornament of the best period of Grecian taste; when decorative Art received from that wonderful people an impetus and an ultimate perfection which has stamped it with an individual character of the most unmistakable kind.

THE INDUSTRY OF ALL NATIONS.

The proprietors of the GRANES
WHITE GLASS AND FIRECLAY WORKS
exhibit a large number of useful



articles, constructed in their im-
proved material, which contains a



large amount of silica and alumina,
both of the most essential use in the



production of an infusible fireclay.
The Vases which fill our column are



made from this material, and are,
therefore, well adapted for gardens.

The elegant CABINET we have here engraved, is of ivory, with ornate mountings, by M. MATIFAR, of Paris.



An octagon TABLE, of which the top is here engraved, by Mr. G. WATSON, of Paddington, who has exhibited ex-
in an enamel specimen of marquetry, executed by extraordinary taste and perseverance in its production.



ART-JOURNAL ILLUSTRATED CATALOGUE

M. GARNER, of Vienna, exhibits a Flower-Vase of metal.



The figure in a devotional attitude is by Mr. F. Mac-



DOVELL, R.A., who calls it "MOURNING PRAYER."

Mr. J. BELL, the sculptor, exhibits the "Una and the Lion," to which the title of PRÆTER is given. It is a highly poetical work.



A rich and costly ENSEMBLE, carved in walnut | wood, is exhibited by Messrs. ROGERS & DEAN.



of London; with its magnificent and costly hangings, it presents a most splendid appearance.

THE INDUSTRY OF ALL NATIONS.

The display of jewellery in the Exhibition, whether of English or of foreign manufacture, naturally attracts no little attention. Whichever



is costly in itself, without any especial reference to the amount of human ingenuity expended upon adding to its primary value, is generally a matter of interest; thus the great Koh-i-noor



diamond finds crowds of admirers, though its brilliancy is unaided by the hand of the goldsmith; still it must be acknowledged that precious stones of every description lose much



of their splendour when seen apart from their settings; and so the taste of the jeweller, his knowledge of the qualities each jewel possesses, and his capability to draw out those qualities to

We introduce on this page an engraving from a rich figured CARBONER HAWK, manufactured by Messrs. CLARKE, SON, & CO., of Norwich, which, we understand, was purchased by

the Queen. It is a first attempt, in Norwich, at shawl weaving in a Jacquard loom. For fineness of texture, variety and beauty of colour, and elegance of pattern, it cannot be surpassed.



the best advantage, mainly depend on the beauty of the stone, permitting it to be properly cut, which also is an operation requiring considerable skill and judgment. The jewellery engraved on

this page is contributed by Messrs. PHILLIPS Brothers, of London, and is very elegant. Of the BROOCH, the first consists of diamonds set in gold and green enamel, the next is a cameo



surrounded with diamonds, on blue enamel; the eagle is also of diamonds; the third is of

diamonds alone. The first BRACELET has diamonds and acanthus set in green enamel, with

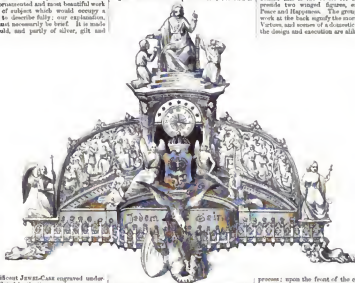
golden links; the other is of blue and white enamel, on which musical notes are represented.

ART-JOURNAL ILLUSTRATED CATALOGUE.

As **INVESTED**, in the cinque-cento style, is exhibited by M. F. SCHNEIDER, of Berlin. It is an elaborately ornamented and most beautiful work of art, full of subject which would occupy a large space to describe fully; our explanation, therefore, must necessarily be brief. It is made partly of gold, and partly of silver, gilt and

enamelled, the extended wings of the Prussian eagle in front serve as pre-headers; the bird is

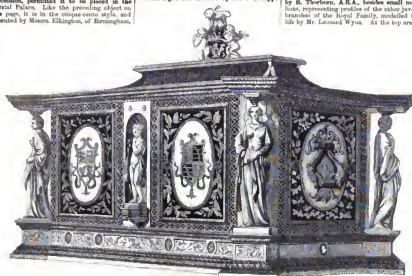
overcoming the dragon, the source of all evil; behind this is the round for ink, over which preside two winged figures, emblematical of Peace and Happiness. The groups in the framework at the back signify the moral and Christian Virtues, and scenes of domestic character, &c.; the design and execution are alike excellent.



The magnificent **JEWEL CASE** engraved under seal is exhibited by the QUEEN, whose property it is, and who has, with great kindness and consideration, permitted it to be placed in the Crystal Palace. Like the preceding object on this page, it is in the cinque-cento style, and executed by Messrs. Elkington, of Birmingham.

from a design by Mr. L. GRANGE. The materials is brass, gilt and silver, by the electrolysis

process; upon the front of the case are enamel portraits, by Ross, of her Majesty, Prince Albert, and the Prince of Wales, copied from miniatures by R. Thorburn, A.R.A., besides small medallions, representing profiles of the other juvenile branches of the Royal Family, modelled from life by Mr. Leonard Wyon. At the top are two



Cupids, bearing the royal crown, surmounted by the British lion. On the back, which is represented in our engraving, are the royal arms,

and those of Prince Albert, surrounded by wreaths of laurel, &c.; the carvings at the angles of the case are novelties in an object of

this description, but they impart great elegance to it. The whole of the ornamental work is in the purest taste, and most exquisitely engraved.

THE INDUSTRY OF ALL NATIONS.

From the designs exhibited by Mr. W. HAXBY Rogers we select three specimens exhibiting much ability in their composition, and an intimate knowledge of the peculiarities of the Italian

artist, of thorough applicability to the uses of the workman and the necessities of the fabric he

and another, the entire one, of a similar character. The remaining designs for manufactures by this artist are for bookclips, monastic tiles, pipes, gold spoons, keys, a cresset, and a



style of the sixteenth century, in which some of his happiest efforts appear, and to which few have given so much attention and study. There is the great advantage in the design by this



designer. We engrave two views of a fire-rod for a tea-table intended to be carved in box-wood,



royal cradle. We may add, the head and tail pieces which decorate our present Catalogue, are from the pencil of Mr. Rogers, they manifest his fertility of invention and the suitability of his designs.



THE SCIENCE OF THE EXHIBITION.



By ROBERT HUNT, Esq.,
Keeper of Mining Records, Museum of Practical Geology.

PART I.



T is a noble object to test by actual experiment to what extent the ingenuity and skill of the nations of the earth has corresponded to the intentions of their Creator, and to improve the advantages which each country can offer the other in supplying the wants, and adding to the happiness of mankind."

The depth of meaning which is in this passage, part of an address delivered by Sir Robert Peel, at one of the Metropolitan Festivals, in honour of the progress of this Industrial Exhibition, admirably fits it for the motto of an essay, the purpose of which is to examine the progress made by the industry and intelligence of man, in rendering useful the raw materials of the several kingdoms of nature, and moulding its productions into forms of beauty.

Man—placed upon a strangely constituted globe, covered with all that is necessary for the sustenance of life—is compelled by the necessities of his condition, to exert his intellectual powers in devising means by which he may be sheltered from the summer heats and the winter colds. This impulsive power drives him to the study of nature—he cannot create, but everything which is created he can fashion to his desire; but to do this he must obey the great physical laws, by which the conditions of all matter is determined, and to obey them they must be known, and to be known, natural phenomena must be attentively observed.

Every step made by man has ever been an example of induction, often obscure, and scarcely traceable as such; but upon close examination such it will be found to have been. Man witnesses a fact, it recurs again and again, experience thus gives him information concerning the things around him, and eventually,—the progress is commonly slow,—he perceives that by the knowledge of that one fact, he may improve upon nature to his own advantage. Some baked clay taught the potter his useful art, and the accidental fusion of sea-sand instructed man in the manufacture of glass. By a similar

class of observations man has ever advanced his knowledge. Science has been the staff by which he has been helped forward, but for many ages he was ignorant of the nature of his aid. This progress, as Coleridge says, was not like that of a Roman road, in a right line; it may be more justly compared to that of a river, which both in its smaller reaches and larger turnings, is frequently forced back towards its fountains, by objects which cannot otherwise be eluded or overcome; yet with an accompanying impulse that will ensure its advancement hereafter, it is either gaining strength every hour, or conquering in secret some difficulty, by a labour that contributes as effectually to further it in its course, as when it stores forward unobtrusively.

It has been by such a devious course as this that man has advanced to his present position; like the river, he has cut out his way through the plains of nature, and in his further advancement he must toil in the same field, but he has all the advantages of that knowledge, which has been gained by other labourers, who having finished their work, rest from their exertions.

We have long boasted of our age as a most remarkable one; the number of useful applications which we have made within a comparatively limited period, are no doubt more numerous than were ever before made within the same time. What has been the cause of this? Why have we such vast improvements in steam machinery? Why the electrolyte, the electric telegraph, and the other aids of which we are so justly proud. Watt observed a small fact connected with the expansion of steam; Daniel noticed a peculiarity in copper precipitated under certain conditions; Ørsted studied the movement of a magnet, in the proximity of a wire, through which an electric current was traversing; and from the observations of simple facts great laws were deduced, and great ends have been attained.

The Exhibition exhibits the beautiful results which have been derived from the study of science, and it will also exhibit some—we trust not many—of the mistakes which are made from the attempt to apply physical force without a knowledge of the laws by which it is regulated. The inventive genius, being closely allied to imaginative power, must be restrained by a philosophical education to become of value to its possessor, or available for the benefit of his race.

Let us examine the four great sections of the Exhibition—Raw Material and Produce, Machinery, Manufactures, and Fine Arts—and see how completely, in every stage of progress, Science lends her aid to Art and Manufacture, confining our attention, however, principally to the mineral kingdom, since the other departments will fall more properly into the hands of those, whose studies have rendered them high authorities.

The development of our lithological treasures is materially aided by geology. The beautiful limestones of Derbyshire, and its four-spars, which have been by the ingenious workmen of that county, wrought into almost every form of article for house decoration. The less known, but even more beautiful serpentine of Cornwall and of Ireland, of which are displayed obelisks, columns, candelabra and vases; the marbles of Devonshire, the porphyries and granites of Scotland, of Ireland, and of south-western England, chiselled into highly ornamental decorative forms, at once speak of the advantage of geological science in developing the native resources of a country.

These pages exhibit many illustrative examples of the perfection of metal-casting in bronze, brass, iron, silver, and other metals. Having passed into forms which attract attention as works of Art, we are too apt to forget that the very perfection we admire is due almost entirely to the condition of crude ore, as we find it exhibited in Class I. To take bronze and brass as our example, amidst the raw materials of the mineral kingdom, we find Cornwall, the most ancient mining district of which history records the fact, or tradition supplies the tale, exhibiting its tin ores in all their variety, oxide of tin, and sulphuret, tin as mined from the lode, and as it is found amid the debris of the primary mountains, and the metallurgical process is displayed in model by which this mineral is reduced to the metallic state. Copper ores from the almost pure metal as found deposited in the serpentine rocks of the Lizard, and the whinstone of the North, to the

double sulphuret of copper and iron, are abundantly displayed; and the large copper smelters of Swansea exhibit illustrative specimens of every stage of a process, regulated at each step by a knowledge of physics and chemistry, which is necessary for the production of copper, in such a state of purity as to be fit for the use of the manufacturer, or for the purposes of that most permanent form of Art—bronze statuary. Zinc ores in the same way tell their own instructive story. If we take the trouble to examine the stages of reduction and manufacture, and thus trace the metal from the ore to the finished work, the value of mineralogy, of chemistry, and of natural philosophy will be seen. The same may be said, even more strongly, of iron. The iron ores of the United Kingdom, collected with infinite labour by Mr. Blackwell, show the variety we possess, and in the large contributions of iron ores from Canada, Nova Scotia, and the United States, from Prussian Germany, Sweden, and Russia, we have such means of comparison as never before could be obtained. Our own iron-masters have fully illustrated the processes of iron smelting; and our manufacturers have exhibited every form of iron-work from the anvil to the sword-blade; from the candlestick to the ornamental casting. Swedish and Russian iron, in all stages, are shown; and the Berlin castings, so long famous, are abundantly displayed. Mineralogy will here have its work of classification; chemistry its important business of analysis; and physics is called into full play in the arrangements of the blast and puddling furnaces, in the economy of fuel, in the application of the gaseous products, and in the new process of using gas in the operation of puddling. Upon the character of the ore, and the perfection of the processes of reduction, depends the condition of the finished work.

At present, it is impossible to do more than indicate the illustrations of science which are spread around; but we can return to the subjects, and explain fully all that is novel and instructive in each particular class, as it falls legitimately under consideration in a close survey. In that chemical department which connects itself with the mineral kingdom, we find illustrations of white lead manufacture, and also the processes of obtaining white zinc—of the preparation of Prussian blue—soluble and insoluble, and, indeed, all those pigments which result from the combinations of oxygen, sulphur, arsenic, or other substances, with the metallic bases. We have the separation of wolfram from tin ore, which is only injurious to it—and the conversion of the tungsten into an oxide, and into tungstate of soda, forming a new mordant for the calico-printer, and also the production of a new colour from the same substance: we believe by passing coal gas over the oxide, by which the metallic tungsten is reduced in a peculiar condition, probably mixed with carbon. Then we find all the products from post—which, if the question of economical production can be satisfactorily answered, promises to convert the bogs of Ireland and Dartmoor, into sources of much wealth;—and many other illustrations of the available application of substances which have not been hitherto employed.

Many remarkable examples will be found in the China clays (Kaolins) of the St. Asaile district, and from Dartmoor; the clays from other localities are also shown in considerable variety, and we shall find specimens of each form of the ceramic art, resulting from the use and mixture of these materials.

As we expected, the potteries have made a display in every respect creditable to England. Not only have we our old familiar earthenware somewhat refined, but we have "Jena porcelain" in a state of great perfection, and some beautiful examples of egg-shell china. In decoration, too, the stimulus which has been applied has evidently produced a considerable advance in the right direction. We have colours which are new or revived, and a considerable improvement in many which have been long employed. Among the revivals, we cannot but notice the beautiful blue Delftware, which is certainly an exceedingly beautiful example of the old Delft colour. In glass, whether we linger over the sheet glass prepared by Messrs. Chance for the Industrial Palace itself, or the enormous shades, the largest ever made by man, or pass on to the plate and flint glass, it will be found that

a considerable improvement has been effected; since the restrictive duties have been removed, manufacturers being enabled, without the annoying interference of the Excise, to try an experiment, it will be seen that the quality of our crystal—flint glass with lead—has been improved, and that the colours imparted by the metallic oxides are far more brilliant, transparent, and intense than before.

The subject of silvering glass is a curious one—and the examples of the most recent improvements of precipitating silver with grape sugar, found in the contributions to the Exhibition, are excellent. We are not, however, sure that the silvering of coloured glass, and thus depriving it of transparency, is altogether what we desire, although we freely admit that many new and not unpleasing effects can be produced by the process.

We are very anxious to see the process extended to silvering plates of glass, as, by the application of such a method, the sad effects which are known to arise from the absorption of quicksilver by the skin, would be got rid of. Humanity calls for an extension of the application in this direction, and we trust the very enterprising patentees will prosecute their experiments with this view.

In immediate connection with the process, because illustrated by it, we may refer to the brilliancy of colour produced in our English flint glass. Since the glass-maker has succeeded in rivaling the Bohemian in his arts, the reflection through these from the silvered surface, teaches us that colours are produced which are curious in their effects, and physically interesting. It has been proved that almost every variety of colour can be produced in glass by very dissimilar agents; that, indeed, charcoal, iron, gold, &c., may be made to impart to glass nearly all the colours of the chromatic scale, by modifying the amount of heat to which the composition is exposed. It will, however, be found that, if the colour transmitted is the same, the colour reflected is different. There is, in nearly every variety of coloured glass, to be detected a certain dichroism. We often find a glass, yellow by transmitted light, which exhibits a blue colour at certain angles of reflection, and the same is often, although less frequently, seen with the ruby glasses. By the silvering process, this reflected colour is considerably exalted, and thus dichroism is very pleasingly illustrated.

The southern wall of the building is covered with such a display of Decorative Art as we have never witnessed, and there is scarcely a specimen of Art or Manufacture there which is not an illustration of the present subject. Numerous specimens of gypsum, both amorphous and crystalline, as nature gives it to us, will be found in the various departments; the resulting plaster of Paris—so called from the circumstance that it is found in great abundance in the neighbourhood of the French capital, being largely worked at Montmartre—forms also an article of exhibition; but to the various means which have been adopted to give hardness and durability to this material, so exceedingly valuable for preserving casts, we would particularly direct attention. Plaster of Paris casts, it is well known, are porous and absorbent, and hence the necessity of painting them to preserve their surface, and even this has proved exceedingly inefficient. Among the beautiful specimens of Art adorning the southern walls of the English division—which extend from the sculpture court immediately adjoining the transept to the western end—will be discovered several examples of processes by which the plaster of Paris is hardened to such an extent that a high polish can be given to its surface. In some cases where these ornaments have been employed, it has been found that the effect of them has been materially lowered by a constant efflorescence over the surface. This would appear to arise from the presence of soda, which it is well known is liable to efflorescence, and it is prevented by giving an acid rather than an alkaline reaction to the composition. The silicate of potash, formed by dissolving flint in caustic potash under pressure, has the property of cementing sand into a very solid stone; this preparation has also been employed for covering fresco-paintings: giving to them, by the application of this soluble glass, a very perfect impervious glazing by which they are protected from the influence of the atmosphere. Messrs. Hanson, of Ipswich, exhibit some specimens of their

THE SCIENCE OF THE EXHIBITION.

siliceous artificial stone; but we desire to see the result of its combination with either the sulphate or carbonate of lime as imitating marble.

Artists will find in the metalliferous minerals, and in that section of the same class—chemical manufactures, most unfortunately somewhat too widely separated, one being on the floor and the other in the gallery—some very beautiful illustrations of the processes of preparing their pigments from the raw material. As illustrations, numerous specimens of cinnabar—sulphuret of mercury,—from Spain and California, will be found. It may be explained that this ore is vermilion in its native state, but it is usually prepared for artists by thoroughly blending sulphur and mercury together, and then exposing them to a moderately high temperature in close vessels. The French exhibitors of pigments have a choice display; many of the colours which they manufacture, from the extreme care with which every part of the process is conducted, being superior to those made in England; this particularly applies to their Mars colours and their lakes. Cobalt and smalts are well illustrated by Goodhall & Reeves, who display the Norwegian cobalt and nickel ores, and a beautiful series of smalts. The discovery of this metal is of very modern date; the ore being used long before the metal was separated. About the end of the fifteenth century the cobalt ore was found in large quantities in Bohemia. It was long thrown aside as useless; the miners had no aversion to it, as it gave them much useless labour, and from proving also prejudicial to their health, they gave it a name which was odious to them. The Germans called supposed evil spirits, hags and witches, *kobolt* or *kobol*, which is probably only another form of expressing *envious and poisonous*, both terms employed in the tenth and eleventh centuries to signify a phantom. Hence the Bohemian miners named this glistening ore which produced them no profit, but gave them on the contrary much annoyance, a *kobol*, and hence our modern term cobalt. As the manufacture of this colour, and its use in the arts of the potter and glass-maker, in addition to its use to the artist, involves much scientific skill, a brief space may be afforded to its history.

Christopher Schurer, a glass-maker at Platten, in Bohemia, being at Schneeberg, collected some fine pieces of cobalt ochre. He tried them in his furnace, and finding that they melted, he mixed some of it with his glass, and obtained a beautiful blue colour. For a long time he prepared a smalt, a cobalt glass, ground into a fine powder, for the use of the potters only; but the use of it rapidly spread, and, eventually, it became greatly in request in Holland. Some artists in coloured glass windows, repaired to Nendel, in order that they might learn the process of preparing this new colour; they persuaded Schurer to remove to Magdeburgh, where he also made the same material. At this period, the colour was worth seven dollars and a-half per hundred-weight, and in Holland from fifty to sixty florins. Eight colour-mills for grinding smalt, which was procured in a roasted state from Schneeberg, were soon constructed in Holland. The manufacture of cobalt blue, was extended over many parts of Europe, and our Industrial Exhibition affords us the means of comparing the smalts of Saxony, of Norway, and of other districts. Some specimens from Cornwall, from Cumberland, and, we believe, from Cheshire, show the extent to which this mineral is produced in this country.

Smalts are combinations of silica and oxide of cobalt, and cobalt blue is a compound of the same oxide with alumina.

Prussian blue is another pigment upon which a large amount of science has been expended, and the result has been the production of most beautiful colours, and the formation of a soluble, as well as the old insoluble Prussian blue.

Our chemists have furnished the Exhibition with some magnificent specimens of a yellow salt—the result of a combination of the nitrogen and carbon obtained from animal matter; the compound being *cyano-gen* with potash. This is called the *ferro-prussiate* of potash, and it is of the utmost importance for dying various shades of blue. If this salt is added to sulphate of iron, Prussian blue is precipitated—the colour gradually improving by the absorption of oxygen from the air. This being the insoluble Prussian blue. If, however, as the Rev. Mr. Roade has shown, we combine the per-oxide of iron

with a solution of this salt, a Prussian blue is formed, which is soluble in water, and of which an ink is prepared; this process, and others analogous to it, has been patented by the discoverer, who exhibits the results of his experiments.

In commencing with a hasty outline of this Exhibition, we have purposely confined our attention to leading features which go to show that the Exhibition is what Prince Albert stated it *should* be, “a true test and a living picture of the point of development at which the whole of mankind has arrived in the great task, and a new starting-point from which all nations will be able to direct their further exertions.” Recurring back to another passage in the same address, we feel how entirely the result conforms to the design. “The products of all quarters of the globe, are placed at our disposal, and we have only to choose which is the best and cheapest for our purposes, and the powers of production are entrusted to the stimulus of competition and capital. So man is approaching a more complete fulfilment of that great and sacred mission which he has to perform in this world. His reason being created after the image of God, he has to use it to discover the laws by which the Almighty governs his creation, and, by making these laws his standard of action, to conquer nature to his use—himself a divine instrument. Science discovers these laws of power, and motion, and transformation; Industry applies them to the raw matter, which the earth yields us in abundance, but which becomes valuable only by knowledge; and teaches us the immutable laws of beauty and symmetry, and gives to our productions forms in accordance with them.”

In the production of the precious metals there are some peculiar processes well deserving of attention. Silver, gold, and platinum are only obtained in a state fitted for man's use by very elegant processes, involving a profound knowledge of chemistry and of physics.

Nearly all our silver is found in combination with ores of lead, principally the sulphuret, and known as argentiferous galena. Some of these ores contain as much as 90 ounces of silver to the ton of ore, whereas others do not give more than from 6 to 10 ounces from the same quantity. The process of separation was originally a very tedious and wasteful one. The lead being reduced to a metallic state, still holding the silver mixed with it, was remelted in a reverberatory furnace, and kept for a long period in a melted state, a strong current of air being made to play constantly over the surface, which is kept disturbed until all the lead is oxidised, converted into litharge or red lead, the silver being left at the bottom of the furnace, silver being less easily oxidisable than lead.

Another process was patented some years since by Mr. Pattinson, by which the process of separation is greatly facilitated, and in the Exhibition we have the Duke of Buccleuch, Mr. Sopwith, and Mr. Pattinson, himself, giving explanations of the method adopted, and the results. These commence with samples of the lead ore as taken from the mine, and end with cakes of silver, weighing from 8000 to 10,000 ounces.

The process is founded on the fact that, in slow cooling, the lead crystallises, or becomes coherent much sooner than silver does; consequently many tons of the melted metal being placed in large iron pots, is kept at a temperature but just sufficient to maintain it in a semi-pasty state. Men are now employed with rakes and strainers to collect and separate, as they form, the small crystals of lead, and these are found to be entirely free from silver. This being carried on for some time, the metal left at the bottom of the pot is lead, excessively rich in silver. The whole of the lead might be thus separated from the silver; but the result of practice has shown that it is more economical to remove the last portion of lead by oxidation. The beautiful purity of the masses of silver exhibited, will show the perfection of Mr. Pattinson's method, and we have only to pass into some of the other departments and examine the beautiful works of Art in silver, to learn how very completely man has here achieved a victory, and moulded nature to his will.

In the small but valuable case exhibited by Messrs. Johnson and Mathew, we have very complete illustrations of the processes

THE SCIENCE OF THE EXHIBITION.

discovered by Dr. Wollaston, of separating platinum from the metals with which it is combined, and reducing it to the metallic form. This is one of those very curious and unique processes by which a metal, which will not fuse in the highest temperature of our ordinary furnaces, is brought into metallic coherence by mechanical force acting in conjunction with an elevated temperature. Mr. Matthiessen of the Royal Mint refinery, also illustrates the processes of refining employed in his establishment:—processes so delicate that one ten-thousandth part of gold can be separated with facility.

The Exhibition is a reflex of the book of Nature, as translated into human language, and to be made beneficial it must be carefully studied. Having rapidly turned over a few of its pages illustrating raw material and produce, we shall, if we proceed to finished manufacture, find a most abundant study, proving most completely that Manufacture cannot advance a step without the aid of her hand-maiden—Science; and that Art is nearly as dependent for the means of completing and multiplying her works.

The porcelain manufacture, to which we have already alluded, and to which we shall again return, exhibits the degree of perfection to which a material, the discovery of the geologist, has been brought. It is but a few years since Mr. Cookworthy, of Plymouth, experimented on the Cornish clay, and then established his small china-works at Plymouth, which were subsequently removed to Worcester. From this beginning the advance has been most rapid, and a survey of the contributions from the Potteries, glancing back occasionally to Class I. with its illustrations of the raw material, will satisfactorily prove the energy of our manufacturers when once set upon the right track.

In our woven and felted materials, and in the illustrations of the processes to which the raw material is subjected, and in the exhibition of the machines by which the finished fabric is produced, we have a yet more remarkable illustration of the power of human intelligence.

Leaving the consideration of the vegetable and animal products to other hands, we would very briefly intimate the wonders of the steam-engine, by which the course, blunder, or the most costly silk, is produced. The impulsive force of steam is as old as Herodotus, but the world waited for Watt to develop its powers. Men had done before his time, what men are doing now, in relation to other physical forces; they had gone empirically to work, they had speculated without experiment, and they constructed machines on the strength of their speculations. These, like the electro-magnetic engines, and the electric light of our own day, failed; as to apply the great forces which nature employs, without first learning how nature employs them, will always fail.

The pseudo-magician destroyed by the spirits he has evoked but knows not how to control, in a picture of the inventor, who builds his invention on a system of blind guesses.

Watt observed the laws of expansion in steam, determined the force exerted at different temperatures, and thus discovered the secret of controlling the giant in his power. That force which is sufficient to lift the most ponderous weight above the highest towers, is also applied to weave the silk gauze for the neck of beauty, without the risk of fracture to the most attenuated thread.

The dyes of some of the beautiful fabrics before us must receive some special examination. Many of the combinations of colours are new, and some of the results are exceedingly pleasing. In dyed and in printed goods we have a very great variety, and we are convinced, that the care and skill which has been devoted to the object of producing colours, which should bear comparison with the best works of the Continent, has resulted in the production of colours, and combinations, which are highly creditable to English science, and to British taste.

The Foreign Exhibitors' contributions are most numerous, and we shall return to the consideration of a great number of the articles which they exhibit.

Prussian Pottery and Metallurgy in particular will claim large notice, and the numerous articles of taste which come within the extensive compartments of France, show equally

the attention of our French neighbours to the science of manufacture; but Russia and Sweden, Holland and Belgium, Italy and Spain, have examples of human industry, which may be studied with profit. America charts a ship of war with the trophies of peace, and from the abundance of the stores, both natural, and such as her artisans have transformed, which are presented to the "World's Fair," as our brothers of the West delight to call it, many subjects of great interest at once strike us, which must form subjects of separate consideration in this Essay. From the Brazils and Chili, to the Canadas, and even further North than these, Hyde Park has received examples of mineral, vegetable and animal produce. Many of them still waiting for the exercise of man's industry, to develop their probably high value.

From South Australia the mineral specimens are very remarkable. The native copper from the Burras-Barras mines, and the beautiful malachites now so extensively used for ornamental purposes, rivaling the long famed malachites of Russia; and the other specimens of the green and blue carbonates of copper, this last in a state of purity and beauty, which at once fits it for a pigment, claim very particular notice. The contributions from the East would of these serve form subjects for a most instructive volume, but we hope to do some small justice to a section of them by devoting to them an especial examination.

It is not now desirable to do more than direct attention towards those points of interest which are illustrative of the position we maintain, and which, in the future pages of this Essay, it is our intention to explain, *seriatim*. On all sides new features are rapidly being developed—the chrysalis state is nearly over, and the bright creature working its beautiful form forth into the sunshine, appears to be a full realisation of the most sanguine hopes of those who nursed the embryo.

Of the examples of the direct application of the physical powers to the purposes of use and ornament, we have some most interesting specimens. Electricity performing its wonderful work of decomposing and recombining has, in the processes of the electrotype, and in the operations of electro-plating, been rendered familiar to the public. Seeing the beautiful productions of the Messrs. Elkington—their electrotype copies from the antique—preserving all the vigour and the high perfection of those beautiful exponents of the Greek and Roman Art, we have been disposed to think the process could not be extended beyond this point of excellence. Nor, indeed, do we conceive that, in this direction, there is much room for improvement. We have, however, here some beautiful examples of the applicability of the galvanoplastic Art, as our Continental friends delight to call it, to the production of large works, many of them very remarkable examples of modelling. But there are smaller applications of the electro-chemical deposit which promise to open up new branches of Art: these are the productions of British and Continental manufacturers and artists, and from an examination of them we shall exhibit satisfactory proof—that much may yet be done in ornamental Art, by the agency of the electrical elements, at a comparatively small cost, which could not, by any of the old processes, be obtained, except at an enormous expenditure of time, and, consequently, of money. Desiring to sketch out, in the first instance, the strong features of the scientific value of this great industrial gathering, another very remarkable exemplification is found in the numerous specimens of the daguerreotype, the eulotype, and other photographic processes which are assembled here, from our own artists, and those of the old Continent and of America. In these we have evidence of the advantages arising from the study of abstract science; and there are yet other examples no less striking, which remain to be examined, and popularly illustrated.

In returning to the subject, we already feel ourselves like Medora, when gathering flowers for Conrad; perplexed amid the immense variety; and discover, we must admit that lady's plan, of guessing at the fairest. We hope, however, that without much difficulty, a tolerably complete examination of the SCIENCE OF THE EXHIBITION may be instituted, which shall not be valueless, as the contribution of one who desires only to be an interpreter of facts.

PART II.

THE civilisation of the world has advanced to a certain point which is marked by the triumphs man has achieved over nature and the applications, to use and ornaments, of the crude material which he derives from their native source. The Great Exhibition stands a striking record of all that the world has done—it marks the point to which mankind has arrived—and indicates what he has yet to subdue.

The accumulated thoughts of thousands of years are expressed in this gathering. No truth—being born unto man—is ever suffered to perish; it may be hidden for a season, but like the seed buried in the soil, it gathers strength and eventually springs forth all vitality upon the world. All noble growths are slow, and those things which are now common to us in their perfection, it should be remembered, required ages to mature them—and the efforts of thought of many generations. For example: how long a time has passed away since the fusion of a siliceous sand and an alkali led to the discovery of glass! Yet all that time has been required by man to produce those beautiful examples which we see in the crystal fountain, so charmingly marking the centre of the Industrial Palace of Glass, and in the lenses arranged for the humane purpose of indicating through the long nights the dangers of a lee shore. Such is also shown to be the case in the processes of metallurgy, and in metal manufacture. The ancients knew but few of the metals, which we now employ; copper and tin and iron and lead, with silver and gold, appear to have been all with which they were acquainted. Zinc is found in the antique bronzes, but metallic zinc was quite unknown until about the middle of the last century: the ancient bronzes being made by combining copper with calamine—an ore of zinc regarded by all as an earth—but it was not until 1736 that Brandt separated the metal.

Albertus Magnus thought iron an ingredient of zinc ore—Paracelsus called calamine a spurious ore of copper—Lemery held it to be a kind of bisulphur—Glauber conceived it to be an immature solar sulphur—Hornberg said it was a mixture of tin and iron—Kunkel declared it to be a coagulated mercury—and Schüster believed it to be tin made brittle by sulphur.

Yet now we employ the metal zinc for a great variety of useful and ornamental purposes, and we use it for multiplying works of high Art. Of this application the Amazon of Kins, and Baily's Eve are fine examples; and the colossal statue of Her Majesty, by the Ville Montagne Company, shows the applicability of this metal to large works.

It appears important in considering the scientific value of the Exhibition to indicate, in the first place, the examples which it contains of the raw material; and secondly to describe the more important applications of science in the processes to which it is subjected under the transforming hand of man. Attention is confined to the Mineral world. Professor Edward Forbes having undertaken the task of describing the value of the Vegetable productions here displayed.

Class I.—is devoted to the earthy and metalliferous minerals of the United Kingdom. As we have to consider these only which are of industrial value, we omit from our consideration such as are merely curious. Building and road-stones are exhibited in considerable quantities—the granites of Cornwall and of Scotland—the serpentines of the Lizard and of Ireland—the limestones of Plymouth and of Derbyshire, and many other of our lithological treasures are here accumulated. If from this section we pass into a compartment on the north side of the nave, those stones will be seen in their manufactured condition. The red and green argentine is wrought into vases—candelabra—obelisks and tables—granites and porphyries are chiselled into chimney-pieces, and many other articles for ornament; and on the outside of the building, on the west end, stands a beautiful Ionic column, the tall shaft of which is a single stone procured from the Chesham granite quarries near Liskeard, in Cornwall. Other examples of the same durable stone will be seen near this. The works in Derbyshire marbles are of the most beautiful description, and numerous specimens of manufactured slate will, we are certain, be much admired. The science of this may not be, at the first glance, apparent; but a mo-

ment's reference to the beautifully coloured Geological Map which hangs on the south wall, will show how Science aids in tracing out the localities within which certain rocks are found, and thus ministers directly to the economical uses of mankind.

In connection with these, the various kinds of clay employed in our potteries are exhibited, and in most cases samples of the pottery produced from them. The clays are, in all cases, the result of the decomposition of the older rocks, and in chemical composition are—variable quantities of alumina, silica and lime—with an alkali in small proportions. The varieties of sands employed in glass-making are instructive—some are from Lynn, in Norfolk, and some from the Isle of Wight,—each glass-maker usually regarding one variety as superior to another. In all cases it must be remembered the sand employed is purely siliceous; and it is in the process of glass-making always combined with an alkali and some metallic oxides, such as the oxide of manganese, or lead.

In the department devoted to the glass manufacture will be found examples of all the materials which are employed in the process. In addition to the sands already named, we find a very beautiful sand sent from the Wenham Lake, and by its side are some specimens of glass made from it. These examples are remarkable for the purity of their colour, and their extreme transparency. There are other sands from Aylebury and from Ireland. Here are also collected the various alkalis which are employed, and specimens of red lead and oxide of manganese which are so largely employed in all the finer kinds of modern glass.

Simply to fuse sand and an alkali produces the common kinds of glass; the combination with lead produces that brilliancy which is the peculiar feature of fine glass. The black oxide of manganese is employed to prevent the peroxidation of any iron which may be present in the materials employed, but it has the peculiar property, if used in any quantity, of changing, under the influence of light, to a fine pink colour; hence great care is necessary in employing this remarkable agent.

Plumbago, or graphite, has for the artist a peculiar interest; the largest quantity is obtained in this country from the Borrowdale mine in Cumberland, in which mine it occurs in masses of varied and most uncertain size. The value of this black lead, which is of a very fine quality, is great; and from this mine alone about £5000 or £6000 worth is sold annually. It is a curious circumstance in connection with this that the discoveries of plumbago have been made at somewhat wide intervals, but the market has been regularly supplied—the proprietors refusing to sell more than a certain quantity annually. Plumbago must be regarded as carbon in a peculiar condition, and as being in all chemical characters identical with the Koh-i-Noor Diamond, which glitters so brilliantly in its safety cage at the commencement of the nave proceeding eastward. Charcoal is readily combustible; graphite is so incombustible that it is employed for making crucibles which will stand the highest temperatures of our furnaces, and the diamond can only be burnt by procuring the most exalted artificial temperatures. The two former are dense black opaque bodies—the last is perfectly transparent, refracting light in a remarkable manner, yet science has demonstrated that this is due to a change in molecular arrangement merely. We have other examples of similar phenomena, but none of them are so striking as the allotropies, as this peculiar state has been called by Berzelius, of charcoal, plumbago, and the diamond.

Our mineral fuel may be regarded as one—perhaps the greatest source of our national prosperity. Every coal-field in the country presents an accumulated mass of human industry; and associated with the coal formations we find almost every variety of process carried on, which requires the use of coal in any considerable quantities. The formation of coal may be studied from the examples here exhibited, in many cases with the associated fossils and the rocky strata.

It is most satisfactorily shown, that coal is of vegetable origin. Certain fern-like trees grew luxuriantly upon large swamps. For ages, perhaps, they grew and decayed upon the same spot, forming thus a large accumulation of carbonaceous

matter. A geological change occasioned this mass to be covered with water, and in the course of time a sandy bed was deposited, which again rose above the water, and then a new vegetation commenced, to undergo the same process. Thus bed after bed of coal was formed, by a series of oscillations, at irregular periods, of land and water. The peat products present to us some such conditions as those which may be supposed to have prevailed in the formation of coal. Peat is, however, formed from the *sphagnum*, or peat-moss, whereas coal is due to the decomposition of *sigillaria*, and other allied plants, which assumed a character much resembling that of the vegetation of the tropical deltas of the present day.

Those who may desire to learn something of the forms of organic life which existed during the formation of the coal, will here find the means of acquiring that knowledge. Here they may learn to correct a popular error—originating in the first place in the speculations of an eminent geologist. The theoretical views of Brongniart were that the coal-plants were designed for the purpose of removing from the atmosphere that excess of carbonic acid, which he supposed to exist at the carboniferous period, and which rendered the earth unfit for air-breathing animals. A popular and poetical writer has but recently given additional strength to this speculation, by his eloquent description of the fern-forests existing in the full luxuriance of vegetation, but without the stir and animation of animal existence. Geological science has proved the incorrectness of this. Animal life existed long before that geological period, distinguished as the carboniferous. These ancient forests were probably filled with insect life, the remains of them having been discovered; and the vestiges of a huge frog-like animal prove the incorrectness of this theory. Every fact physics—and there are many showing the mutual dependence of the Animal and the Vegetable Kingdoms on each other—tends to prove the impossibility of one form of organic life existing without the other, under the present physical constitution of creation.

Iron ores, as associated in nature with coal—all the argillaceous, or clay-ironstones, being found in the coal-fields of Great Britain,—are very properly associated with the coal in the arrangements of the Exhibition.

The gross annual production of iron in Great Britain is now upwards of 2,250,000 tons. South Wales furnishes 700,000 tons, and South Staffordshire rather more than 600,000 tons. Scotland producing about the same quantity.

In addition to the iron-stone beds of the coal measures, the mountain limestone series of Lancashire, Cumberland, Durham, Derbyshire, Somersetshire, furnish beds and veins of hematite; and the older rocks of Devonshire and Cornwall contain many important beds of black hematite, and magnetic iron ore. All these varieties are here well arranged, and may be studied with advantage. The most curious are, perhaps, the iron-stone formations from the green sands of Sussex. At one period this was the principal source from which we derived iron in this country; but the forests becoming exhausted, the iron-workings of Sussex were abandoned. It is now, however, probable that the railways will again open up this unworked field, which may at no distant date furnish the iron trade with additional supplies.

Many of the exhibitors of iron ores have associated with them examples of the iron manufactured from them; thus we are enabled to judge of the general character of the metal produced from any given variety of iron. There can be no doubt but the chemical constitution of the iron ore materially influences the physical character of the metal; it therefore becomes very important that the chemical analyses of each variety should be afforded.

The processes of reducing the ores of iron to a metallic state involve many very peculiar chemical changes, particularly under the improved processes, which our own iron-masters have adopted. The ores of iron are either oxides of iron, or carbonates of the oxide; and the difficulties of the metallurgical processes rest in the expenses with which the oxygen and the carbon are retained by the metal. It would occupy too large a portion of this essay to describe the processes of iron-smelting. Good illustrations of the conditions under which iron is found, and of the mode of reduction, are afforded in

one group by the Elswick Company, who exhibit a model of this important mineral district, another, of their blast furnaces, and of the numerous arrangements required to secure a successful result. Manufactured iron of various kinds have a place on the adjoining counters, so that passing from the collection of all the iron ores of the United Kingdom, as brought together by Mr. S. Blackwell, of Dudley, to the models just alluded to, and onward to the samples of manufactured iron shown by the Messrs. Blands and others—a very complete view will be obtained of this most important branch of British industry. Mr. Morris Stirling has introduced some novelties in iron manufacture. He alloys this metal with lead and tin, and arsenic, and many of the results obtained are stated to be in the highest degree favourable. Several other alloys introduced by the same patentee exhibit certain peculiarities, which, whatever may be their merits in a commercial point of view, go to prove that very perfect combinations of metals may be obtained. By alloying iron in this way, bells have been produced at a considerably less cost than bell-metal, which is a compound of copper, tin and zinc, in varying proportions. One very large bell placed in the nave is certainly exceedingly musical—its full, deep tone occupying the whole space west of the transept, when it is set in vibration. This is a point of much interest. Iron bells have been occasionally employed, but never very successfully, the chief objection to their being the want of a pleasing tone in them. That a small quantity of another metal added to iron should effect so great a difference is not a little remarkable, and it proves that a very slight cause alters the order of molecular arrangement.

The fine iron castings of Berlin have been long celebrated throughout Europe; and their extreme sharpness has been thought to depend upon some peculiar condition of the bog-iron ore which is usually employed in Prussia. Within the Zollverein department, will be found good exemplifications of all the ores of iron employed in the German states, the iron manufactured from them, and examples of the perfection to which iron-casting has been carried. We think an examination of the Coalbrookdale ornamental rustic dome, and the other iron castings which they exhibit, will show that British manufacturers can produce ornamental work in iron, and are in no respect inferior to those for which some places on the Continent have been famed. It would not, therefore, appear that the supposed superiority was due to any chemical difference, since we find that careful manipulation alone is capable of producing works of equal excellence.

The opportunity now afforded of examining the various iron ores of the world, is, in itself, a proof of the value of the Exhibition. The United States, Canada, and Nova Scotia, are large exhibitors. Trinidad sends her magnetic iron from the Maracas Valley, and hematite from Gaspari Island. New Zealand contributes a rich iron sand; and Tasmania, also, shows the varieties of this valuable ore, which that interesting colony produces. The continental kingdoms have seen the importance of collecting their native stores; and the iron ores of Sicily, of the Italian peninsula, of Spain, of Austria, Germany, Russia, Sweden, Belgium, Holland, and France, instruct us in the various characters of the different formations. That chemist who would collect specimens of each variety, and subject them to a careful analytical examination, particularly with a view of determining minute differences in the constituents, would be performing a work of the utmost value to his country. Numerous specimens of sheet-iron are exhibited; but even the finest varieties of English iron in sheets have not that uniformity of surface, that evenness of texture (if the expression may be altered), which the Russian sheet-iron possesses. We heard an iron-master say that in comparison with English iron, the Russian possessed the fineness, flexibility, and surface of India-rubber.

In pursuing our scientific examination of the Great Exhibition, steel naturally occupies the next place to iron. Sheffield, with her cutlers' trophy, and the fine display of almost every kind of steel manufacture, may be regarded as the exemplar of this branch of English industry. From all parts of the world we find examples of steel weapons. The showy arms of the chiefs of the tribes of India, the swords of the Africans, and the scimitars of the Turks, the true Toledo, and the beau-

tiful blades of Damascus, all show the attention which man has given to the production of the implements of war. The superior temper of many of these swords appears to be due to the circumstance that the steel is manufactured in comparatively small quantities, from iron obtained directly from magnetic iron ore, which variety we only find in two localities in this country, and, even in these, in exceedingly small quantities.

Steel, it is tolerably well known, is iron combined with a small quantity of carbon. The mode in which this is effected is, usually, by a process called puddling. Bars of selected iron are stratified in a furnace with charcoal, and the whole maintained at a high temperature for some time. The chemical or physical changes which take place are imperfectly understood; but the association of a small quantity of carbon with the iron, in the process, is certain. In some instances, steel is made at once in the furnace, by smelting it with charcoal; and to the circumstance that most of the iron produced in Russia and Sweden is smelted with wood, has been referred, with some degree of probability, the superior character of the iron of those countries.

The mines of Danemora, in Sweden, so renowned for yielding the finest iron in the world, the greatest part of which is sent to this country, were discovered in 1488; since which time they have been constantly worked. The richest ore raised from these mines contains 70 per cent. of iron, and the poorest 30 per cent.; the quantity raised is about 12,000 tons annually, which produce about 4000 tons of bar iron. These are rather quarried than mines, being worked open to the day. They sink pits, which form so many gulches, into which the miners descend in buckets; in these they also send up the ore produced. The ore is only worked in the summer months, and is laid out in heaps and divided in the winter months, from November to March, when it can be conveyed in sledges. About 300 persons are employed in mining and transporting the ore, and as many more at the forges belonging to the proprietors.

In the Sheffield department will be found an instructive series of models, showing the mode adopted for preparing and working steel.

We pass from iron to some of the other metals. Cornwall exhibits the various forms in which tin is found in this country; and Bohemia, in which country tin mines have been worked from a very remote antiquity, exhibits that metal; and the islands of the Indian Archipelago have forwarded specimens of this useful mineral. Associated with the Cornish produce, a model of a furnace, for smelting the ores of tin, is shown; and by a short study of this, a very perfect idea of the easy process by which this ore is reduced, may be obtained. Tin has been worked in Cornwall from the earliest periods. That the Phœnicians traded with Cornwall for this metal appears certain; and, from time to time, indications of the old workings are discovered. There is exhibited a specimen of a very ancient block of tin, found in ploughing a field; these blocks are usually called "Jew's tin;" and, from time to time, many of these have been discovered, and often associated with the furnaces in which the ore was smelted. These remains prove the early period at which the tin-mines of Cornwall were worked; the probability being that the ancient Britons were taught mining by the merchants of Phœnicia.

One of the valuable applications of chemical science has now to be considered. Mr. Osland exhibits a case containing illustrations of tin ore containing wolfram, and this substance separated from it. The ore is a silicate of tin, and when combined with the tin, it is of so deteriorating a nature, that the market price of such tin is very low. It is a very intrinsically substance, not attacked by any acids; and although pure tungsten has been prepared, it is very unusual to see it in anything like a coherent form. Mr. Osland's process for its removal from the tin consists in roasting the impure tin ore with soda, the result of which is the formation of a tungstate of soda, which is dissolved out, leaving the tin pure. The tungstate of soda being treated with an acid, the oxide of tungsten is separated; and this is likely to be extensively employed as a mordant base for some of the processes of calico printing.

In the Chemical Department, Mr. Young exhibits some

remarkable crystals of stannate of soda, formed by combining the tin directly with the alkali; and this preparation is also largely employed in firing earthen and other colours.

Copper ores form a very extensive and important section of the British and Foreign departments of the Exhibition. The Kedruth Committee have exhibited some remarkably fine masses of the ordinary yellow ore of the kingdom—the double sulphuret of copper and iron—and also some beautiful examples of the grey sulphuret. The native copper from the serpentine rocks, near the Lizard, is exhibited in pieces which rival the enormous lumps obtained from Lake Superior. We observed that three specimens—one from the Lizard, Cornwall, another from the trap rocks, near Glasgow, and an American mass—are placed together, to show the peculiarities of those remarkable mineral formations.

The process of copper-smelting has been well illustrated by the Swansea Committee; all the copper produced in this country, and all that is imported, being smelted at that town. Messrs. Bankart and Sons exhibit their new process, in which, by roasting, the ore is converted into a soluble sulphuret; this is dissolved, and the copper precipitated by throwing iron into the solution. Mr. Longmaid, another exhibitor, adopts, in the process which he here illustrates, the principle of roasting the ore with common salt, by which he obtains a sulphate of soda; any silver which may accompany the ore is converted into a sulphate, and the copper is rendered soluble. It is stated that this process, which is now being tested by practice, is capable of separating exceedingly small portions of silver from the ore; and it thus renders available a substance which has hitherto, unless the combined silver was in considerable quantities, been wasted. Science, in this manner, goes on ministering; thought is for ever exerted on the subject for improving our Arts and Manufactures, and the reward is certain to those who advance to the work with that preliminary knowledge of physics and chemistry which should form a portion of all practical education. The mineralogist will be delighted to trace from table to table, in the collection, fine examples of the ores of his own country, of the Colonies, and those of other States. The Australian colonies are, as might have been expected, large exhibitors of copper; ten, the Barr-Barra Mines, near Adelaide, in particular, showing some of the finest examples of carbonates and oxides of copper ever seen. These mines are exceedingly curious, both in the character of the ore raised, in the conditions under which it occurs, and it is singular in the history of mining. In 1845, from indications which were considered favourable, this mine was started by a few adventurers in Adelaide; and since that time the following quantities of ore have been raised:—

| | |
|------|--------|
| 1846 | 6,359 |
| 1847 | 16,794 |
| 1848 | 12,791 |
| 1849 | 7,789 |
| 1850 | 18,692 |
| | 55,425 |

tons of copper ore in five years, the market value of this being 738,108*l*. The Canadians send to us many examples of their copper ore. It appears, however, from the reports of Mr. Logan, the government geological surveyor, who has been a most indefatigable investigator, that the mineral deposits of all kinds are most extensive. The Canadian Collection, which is due principally to the exertions of the geologists who have explored the gold, silver, iron, copper, and lead—human industry alone is wanting to develop fully the native wealth of this interesting country. Science has been working over her plains, and through her forests, with zeal, and numerous most valuable discoveries have rewarded the geologist. The miner and the metallurgist should follow and profit by the discoveries, the examples of which are laid before the world for the first time in the Exhibition.

Tin and copper—Bronze forms a valuable alloy which was employed at a very early period. The cells of the ancient inhabitants of these islands, and the swords of the Romans, were made of bronze; we have substituted steel for all the purposes to which they applied it, and have allotted this metal chiefly to ornamental purposes.

Several very fine examples of bronze castings may be examined in the British and Foreign departments. The bronzes of the Coalbrook-dale Company may fairly compete with those of Austria and France, and they stand a fair comparison with those beautiful productions for which Munich has been so long celebrated. The George and Linnaea are examples of fine bronze castings, but these are not equal to the Lion which stands untouched by any tool since it was removed from its sandy mould in which it was cast. We would dwell on many of the exquisite works in bronze with pleasure, but it would lead us from our subject, and take us into the domain of art, when our object is only to show how far science has aided in giving permanence to its high creations. One bronze casting of a group of flowers, in an ornamental stand, stated to be cast into moulds formed by the flowers themselves is very remarkable. The producer is Clement Papi, of Florence. It would appear to be the result of some such process as Chantrey recommended, which was to take any delicate branch with its leaves, and having lightly suspended it in a box, to pour in very liquid plaster of Paris. When this—which would find its way into every part—was perfectly set, the mass was exposed to a heat sufficient to char the vegetable matter, without in any way altering the mould. The mass being shaken out, the metal was poured in, and then an exact *fac-simile* of the object was obtained. Many other plans may be devised, but this is recommended as a practical one.

We are enabled however by the processes of electrolysis deposit to produce, very easily, results which might be rendered very far superior to this. As one of the most important exemplifications of the useful applications of science, the electrolysis claims particular attention. The source of power being the voltaic battery, it is necessary to examine in the first place the extent to which this variety of apparatus is exhibited. The ordinary forms of battery are all shown. Smee's battery is presented under various modifications—from the common laboratory one, to a beautiful battery by Messrs. Horns and Thornthwaite, which is really too elegant for use. The advantages of Smee's battery is, one fluid alone is employed. The dilute sulphuric acid is covered with platinum, in a state of very fine division, and zinc, by the action of the sulphuric acid the zinc is oxidized, and sulphate of oxide of zinc is formed; by the chemical excitement, electricity is disturbed, and the platinumized silver plate, from which hydrogen is freely evolved, becomes the collector, as it were, of this subtle agent. According to the intensity of chemical action, so is the amount of voltaic electricity developed; hence, in any battery arrangement, if we secure the first condition, we obtain a greatly increased action. This is exemplified in Grove's batteries, also exhibited amongst the philosophical instruments. In Grove's battery two fluids and two metals are employed; the latter are platinum and amalgamated zinc, the former dilute sulphuric acid and strong nitric acid. A porous cell is placed into one of glass or glassed earthenware, a cylinder or plate of amalgamated zinc is placed in dilute sulphuric acid in the outer cell, and platinum in strong nitric acid in the inner one. Here we have the chemical action of the acid on the zinc, and the action of the platinum on the nitric acid, which is rapidly decomposed. The result is the continuation of the excitement, and the development of a largely increased amount of electric force.

In many respects similar to Grove's battery, we have also the carbon battery, introduced by Bunsen, and much employed on the continent. In these the carbon supplies the place of the platinum, and in all respects the form of action in the cells is the same. Daniell's battery is also exhibited; this, it will be remembered, is remarkable for the constancy of its action, and it is important as having led to the discovery of the electrolysis. It, like Grove's, consists of two cells in that one which contains the copper-plate, a strong solution of sulphate of copper is put, and in the other diluted sulphuric acid. The zinc, as in the other examples, is oxidized, and for every equivalent of zinc dissolved, an equivalent of copper is deposited from the cupreous solution. There are several other forms of battery modified to meet the requirements of the electric telegraph; in these the object is duration of power and permanence of action. This is secured by the employ-

ment of sand in some, and by the additional security of a system of percolation in others, by which the exhausted acid is removed from the battery. The tin and iron batteries may be ingenious, but they do not appear to offer any advantages over those we already possess. Since any two bodies, upon which the chemical action is different, may be employed to form a voltaic pair, it is evident that a great variety of batteries might be constructed, but to improve those we already possess is of more importance. The great disadvantage under which we labour in our voltaic arrangements, arises from the loss of electricity as it passes from a solid to a fluid medium, or from a fluid to a solid one. Nearly as much electricity is developed from a single pair of plates, as from a dozen; but the eleven are required to urge it to a higher intensity, to develop it with more force.

Electric Metallurgy, or the electrolysis, receives its best illustrations from the hands of Messrs. Elkington, who exhibit some choice productions of art and art-manufacture.

The principle upon which the electrolysis is based has been already intimated in our remarks on Daniell's battery, but it will be well to consider it a little more closely. Under any form of battery the conditions are these:—We produce or develop electricity in the battery by chemical excitement, and according to the quantity of matter which changes form within the cell, is the quantity of electricity set free, and if by wires this is conveyed to another cell, we discover that the operation of the force is such, that as much metal is deposited, as is equal, in chemical relation, to that dissolved in the battery. We have therefore only to form a surface which shall equally diffuse the electricity, to produce a uniform deposit. We may get the copper, for example, to collect in a mass around the end of a wire, or by providing sufficient surface, diffuse over a large space, and by a very attenuated film. In copying of statues the most satisfactory mode of proceeding is to form a mould of either gutta percha, or in the elastic compound of glue and treacle; then to well cover it on the inside with plumbago, pure black lead; this forms a good surface for diffusing the deposit, and we obtain, in proper care being taken, a perfect copy of the original. Electrotype plates may be thus multiplied, the first copy from the original plate would have a raised impression, but any copy taken from this one in relief would be a *fac-simile* of the original. The Ordnance maps, suspended at the western end of the building, and the geological maps against the southern wall, are mostly printed from electrolysis plates. Many of the ornamental blocks employed in the works of the Messrs. De la Rue, have had no less than 3,000,000 impressions taken from them, and they show but slight indications of wear. These are all produced by electrolysis deposit.

Electro-gilding and plating are most important applications of this beautiful process, of which numerous illustrations are afforded. The most remarkable being those of Messrs. Elkington, particularly the examples forwarded to the Exhibition by Her Majesty. The action is in a character precisely similar to that by which copper is deposited; but the solutions of gold and silver are more easily decomposed than those of copper, and hence less battery power is required to effect the revival of the metal. The solutions usually employed are formed by dissolving the oxides of gold and silver in the cyanide of potassium; other solutions may, however, be employed.

The applications of electricity to our own time are numerous, illustrated, and they solicit close attention from those who would learn what science is doing for manufacture. In proceeding with our examination of the other applications of this great power, we shall have to return to the consideration of the philosophy which has guided our experimentalists, and by attention to which, we can alone hope to attain to any extension of its economical value. We have now reached the elements of a slender cloud to add us in our metallurgical operations; to manufacture for us vessels of utility; and to decorate for us the choicest productions of artistic taste. These illustrations, as afforded by the Exhibition, advancing from the almost primitive mode of reducing tin, to the scientific one of gilding a richly chased vase, are of the most instructive character, to which each visitor may return again and again to find them suggestive of new trains of thought.

THE SCIENCE OF THE EXHIBITION.

PART III.

THE processes of the electrolyte very naturally conducts to the consideration of that action of the Exhibition within which are exhibited an application of a still higher order of science. Electricity—that singularly subtle and diffusive power, which is perhaps, of all the physical agents, the most active in nature—is not chained and made to do the bidding of its subduer. The marvel of modern experimental science is, beyond all question, the Electric Telegraph, by which we are enabled to convey instantaneously our thoughts to the most distant point. The flight of Ariel is slow compared with the speed of this physical agent, which (the mechanical difficulties of placing the wires below the reach of the action of breakers, when crossing seas, being overcome,) would enable us to convey our desires round the world in an instant of time. Those who are unacquainted with the peculiarities of arrangement which lead to the effective production of this result will do well to study the instruments in the Exhibition of Industry by means of which telegraphic communication is now effected. It may not be regarded by our readers as out of place if we endeavour to render the mode by which electricity is generated and employed familiar. The relation between voltaic currents and magnetism must be understood. It is, therefore, necessary that this should be clearly but succinctly described. Voltaic currents are generated by chemical action. An acid, usually sulphuric, is made to act upon zinc plates, which are placed in juxtaposition with, and connected by, a wire to a copper plate. The electric action is dependent on the different chemical affinity of the liquid for the respective metals: it will dissolve the zinc, but not the copper. Water is decomposed during the action. Hydrogen gases escape at the surface of the copper plate, and the oxygen combines with the zinc to form oxide of zinc. The line of action as established by the researches of Faraday is that the quantity of electricity liberated is exactly equal to that which was necessary to hold together in their original states the substances undergoing chemical change. During this disturbance of the electrical equilibrium, a portion passes through the liquid to the copper plate, and back through the connecting lead to the zinc plate. However great may be the length of the connecting wires between the plates, the disturbance is communicated along the whole length of the line. The difference between the result, when the distance is but a few inches, and when it is extended over many miles, is only lessened by the degree of resistance offered by the metallic wires to the propagation or onward movement of the disturbance. We speak of a current traversing the wires. Our language, here imperfectly applied, is often very incorrectly understood; an idea of something flowing is usually conveyed to the mind by this form of expression. This is not the case. The motion is communicated to one point of the mass, which is transmitted to the other, or rather is sensible at that extremity. At the time of this electrical progression, the wire is magnetic,—that is, it will attract iron in the same manner as a magnet does. If we hang up a magnetic piece of iron, so that it swings parallel to, and over or under the wire, this iron is unmoved if an electric disturbance is not circulating; but the moment that the force moves, from connection being made with a battery in action, the iron is swung round at right angles to the direction of the wire. When contact is broken, and no electricity is traversing, it returns to the line of the wire; connection being made, it is again deflected. Having a power of thus moving a magnetic needle at any distance from the battery, we obtain the means of giving signals and of conveying signs. For the purpose of increasing this effect, the wire is bent many times around a magnetic needle, so that the current passing frequently along the length of the helix produces an increased effect. In this manner the weakest disturbances are rendered sensible. Upon this principle the needle telegraphs are constructed. These needle arrangements are of several kinds; the great object being to obtain rapidity of deflection and freedom from oscillation. The compound needle is that which is most frequently employed, and it consists of a very thin ivory disc, which sustains several highly magnetised short needles, firmly secured to it. This compound arrangement is placed between

the wires and the index-needle beyond them. It will be evident, upon considering the construction, that by such an arrangement, the index-needle must come to rest almost immediately after it has been moved. Another method for moving the index is to attract or repel the support placed upon its axis by means of an electro-magnet. When we coil around a piece of soft iron a quantity of copper wire covered with silk, and connect the ends of those wires with a voltaic battery, the iron becomes powerfully magnetic. The nearest contact is broken the magnetism is destroyed; or, by reversing the direction of the current, the poles of the magnet are rapidly changed. Thus any series of attractive or repulsive influences can be obtained with much facility. Brett and Little's patent electric telegraph is of this order. The magnet is in the form of a ring or horse-shoe, and is suspended in the centre of the helices of copper wire, which are double, and of a circular form. This magnet is deflected either to the right hand or to the left, according to the direction of the current. The indicators are not magnets, but are moved by the agency of the magnets, by which a distinct and certain indication is insured. In the electric printing telegraphs, similar means are employed to effect the desired end of printing the intelligence communicated. In some, inked types are actually employed, and brought into contact with the paper by the force of an electro-magnet. In others, wherever construction is made, the electricity effects chemical decomposition. When it is interrupted, no change takes place. Thus any number or variety of marks can be impressed at any distance from the communicator with great rapidity. The chemical agents usually employed to produce the marks on the paper are the ferro-cyanide of potassium, which, being decomposed, gives rise to the prussiate of iron, and makes a deep blue impression; or the iodide of potassium and starch, which is white,—but by the battery action, iodide of starch, a very dark purple substance, is produced, so that the letters or signs are impressed in a dark colour. All that is here attempted is to give an outline of the processes adopted; with the modifications of these, and the details which are introduced for the purpose of facilitating communication, space prevents our dealing.

Bakewell's Electric Telegraph possesses the peculiarity of transmitting *fac-similes* of the hand-writing of correspondents, so that their signatures can be identified. This is so ingeniously effected, that we must endeavour to render the arrangements adopted intelligible. The transmitting and receiving instruments are of the same description. Trains of wheels moved by weights impart uniform motion to each; these are allowed to act, or are checked, by the action of electro-magnets, in connection with a voltaic battery. As the power is derived from the same source, the machinery, at whatever distance the two arrangements may be from each other, equally affected, the movements of the wheels and weights being isochronous. On each instrument is a metal cylinder, and over each cylinder metal styles, which press lightly on the cylinders from end to end. One of the poles of the voltaic battery is connected with the cylinders of the instruments, and the other with the styles. Thus those two systems of arrangement are always in precisely the same electrical condition; this being clearly understood, the following mode of electro-printing, or writing, will be intelligible. The message to be sent is written on a sheet of tin-foil, the sealing-wax varnish, is placed on the transmitting cylinder, all the lines covered by the varnish serve to break the connection. On the receiving cylinder a sheet of paper maintained with acidulated ferro-prussiate of potash is placed, when the connection is completed, electro-chemical decomposition is effected, and where any interruption occurs no change takes place. Now the cylinder carrying the inscribed tin-foil and that on which is placed the prepared paper, moving at the same rate, the current is interrupted by the varnish-writing in both at the same time. All the parts of the paper on which the metal styles press, when they are in connection with the tin-foil, become blue, all those corresponding with the varnish on the foil remain white. Hence the writing, signs, drawing, or whatever it may be, on the tin-foil, are faithfully represented on the prepared paper, hundreds of miles from it.

The application of the subtle power of electricity to

THE SCIENCE OF THE EXHIBITION.

measure the tread of time, is another of the beautiful applications which have been made of this agency. Mr. Shepherd's clocks in the Exhibition present many novelties, the general principles of which we must endeavour to describe. It has been already explained that electro-magnets give us the power of changing the direction of a current at will, and of exerting a large amount of attractive force and suddenly suspending it. It will be evident, when the subject is considered, that magnets may be thus employed to attract and repel a pendulum which shall give motion to a clock, and that the force may be communicated to any number of clocks. But when this method is adopted, any irregularity in the action of the battery produces a corresponding irregularity in the motion of the pendulum. To obviate this, Mr. Shepherd, who exhibits the large electric clock in the transept of the Exhibition Building, gives impulse to the pendulum by means of a resonator escapement. The pendulum under any circumstances of battery action, moves through the same arc in the same time, and thus uniformity of action is secured; the electro-magnets being the motive instruments of the whole. They are also employed to lock up the escape-wheel, to prevent motion being communicated by the action of the wind upon the large hands on the outside. In the striking arrangements much ingenuity has been exerted, the electro-magnets moving the hammer by the means already explained, and also regulating the number of blows to be struck by a very ingenious mechanical contrivance shown in a skeleton clock.

The arrangements for regulating the polar termination of wires of the batteries in the apparatus for the electrical light are exceedingly ingenious, and they appear to secure as far as it is practical to do so, the uniform distance of the charcoal points from each other, upon which entirely depends the constancy of the illumination. It is of course understood that whenever there is any interruption to the passage of the electric current, or where it has to move from a good conductor through an imperfect conductor, there is a manifestation of other forms of physical force; heat and light are developed. If we connect the two poles of a powerfully excited voltaic battery by a continuous wire, forming what is called a closed circuit, everything progresses quietly, there is no evolution of either heat or light. If, however, we cut the wire in any part, there will be developed between the parts so cut, both caloric and luminous agencies; the result—to use a poetic form of expression—from one end or pole to the other, of electricity, by some mysterious action, gives rise to light and heat. Thus is produced the electric light, to increase the intensity of which poles of the hardest and purest charcoal are introduced; these have generally been manufactured for the purpose, by powdering the best coke that could be obtained, pressing it in moulds with some cementing material, and re-cooking it with care. However hard the charcoal may be, it undergoes a change; particles are constantly carried off from one pole and deposited upon the other, thus altering their distances apart, and interfering with the uniformity of the light. The difficulties which arise from this cause may without doubt be overcome by mechanical adjustments; but there are other considerations, of an economic character, which appear of a more serious kind. As they apply equally to the applications of electro-magnetism as a motor of machinery, the consideration of the question may properly follow the notice of the electro-magnetic machines exhibited.

When it is shown that a piece of soft iron, around which is coiled a quantity of copper wire, through which an electric current is circulating, can be made to sustain the weight of many tons, or to exert an enormous pulling force, it appears natural to suppose that an agency so manageable as this might be applied with the greatest advantage to moving machinery. Numerous attempts have been made, and the application of the power in several different ways attempted, but hitherto without any successful result. The power of electro-magnets, it is believed, may be increased without limitation. A voltaic current produced by the chemical disturbance of the elements of any battery, no matter what its form may be, is capable of producing, by induction, a magnetic force,—this force being always in an exact ratio to the amount of matter (zinc, iron, or otherwise) consumed

in the battery. The greatest amount of this magnetic power is produced when the chemical action is the most rapid. Hence, in all magnetic machines, it is more economical to employ a battery in intense action than one in which the chemical action is slow. It has been most satisfactorily proved that a one-horse power is obtainable in an electro-magnetic engine (the most favourably constructed to prevent loss of power), at the cost of 45 pounds of zinc, in a Grove's battery, in twenty-four hours; while 75 pounds of zinc are consumed in the same time, to produce the same power, in a battery of Daniell's construction. The cause of this is referred to the necessity of producing a high degree of excitement to overcome the resistance which the molecular forces offer to the electrical perturbations on which magnetic force depends. It is contended, that although we may not have arrived at the best form of voltaic battery, yet that we have learned sufficient of the law of electro-magnetic forces to declare, that under any conditions, the amount of magnetic power would depend on the change of state,—consumption of an element,—in the battery, and that the question resolves itself into this—What amount of magnetic power can be obtained from an equivalent of any material consumed? The following are regarded as the most satisfactory results yet obtained.—1st. The force of the voltaic current being equal to 678, the number of grains of zinc destroyed per hour is 154, which raised 9000 pounds one foot high in that time. 2nd. The force of current being relatively 1300, the zinc destroyed in one hour was 291 grains, which raised 10,000 pounds through the space of one foot. 3rd. The force being 1000, the zinc consumed was 225 grains; the weight lifted, one foot, 12,672 pounds. One grain of coal consumed in the furnace of a Cornish engine lifted 145 pounds one foot high; whereas one grain of zinc consumed in the battery lifted only 80 pounds. The cost of one hundred weight of zinc under No. 1, is 2s. 6d.; the cost of one hundred weight of zinc is about 21s. 6d. Therefore, under the most perfect conditions, magnetic power must be nearly twenty-five times more expensive than steam power. But it is an impossibility to reach even this, owing, in the first place, to the rate with which the force diminishes through space. As the mean of a great many experiments on a great variety of magnets, of different forms and modes of construction, the following results are given.—Magnet and armature in contact, lifting force 220 pounds; magnet and armature distant 1-25th of an inch, 90-8 pounds; distant 1-125th of an inch, 80-7 pounds; distant 1-63rd of an inch, 50-1 pounds; distant 1-50th of an inch, 40-5 pounds. Thus, at 1-50th of an inch distance, four-fifths of the power is lost. From an examination of all these results, I am disposed to regard electro-magnetic power as impracticable, on account of its cost, which must necessarily be, under the best conditions, fifty times more expensive than steam power, and it is at present at least one hundred and fifty times as costly.

These remarks apply with equal force to the Electric Light. It must always be borne in mind that no physical power can be produced without a change of material somewhere. Steam is generated by the consumption of a certain quantity of coal; electricity by an equivalent weight of zinc, or some other metal on which chemical action takes place. Thus the question resolves itself into the simple one of, Is the light produced from the gas obtained by the destructive distillation of coal, or that developed by the consumption of zinc in the voltaic battery, the most effective and economical?

Other applications of electricity have their exemplification in this gathering of the results of human thought. One among others of the utmost importance, occupying no very prominent position, deserves our especial notice. Amongst the minerals in Class I will be found two obols of coal, and one of an exceedingly hard stone, arranged by mineral tools; and against the wall a drawing of a plan (now in most successful operation at Abercrombie, in Monmouthshire) for blasting rocks at the bottom of a shaft by voltaic agency. In the ordinary mode of sinking through hard rocks, one hole only can be fired at a time. The miners then have to leave the shaft, and remain absent until the gases formed by the explosion are sufficiently cleared away to allow of their returning. In this way much time is lost. By galvanism

THE SCIENCE OF THE EXHIBITION.

any number of holes can be fired at the same time; and thus we obtain the cumulative force of simultaneous explosions. The mode of proceeding at the colliery of Sir Benjamin Hall is, in the first place, to bore three holes, forming the points of an equilateral triangle, which are inclined inwards towards the lower part. Fuses are prepared by passing the wires from a galvanic battery to the bottom, and there interposing a small piece of thin platinum wire. The wire is continued on to the next, or any number of holes; platinum being interposed at that point which is to be brought in contact with the gunpowder. The three holes being properly charged in this manner, the miners leave the pit, and, coming to the surface, make themselves the connection with the battery, and thus, out of all chance of accident, fire the holes. The moment the circuit is completed, all the platinum wires become white hot, and the powder is exploded. The first action is to rend out the entire centre of the shaft. Six or seven holes are next prepared in a similar manner, and also fired by the battery simultaneously, by which the whole of one surface of the shaft is heaved out. It is stated that the application of this power, in this instance, will lead to the happy result of sinking the shaft, and improving the ventilation of the coal-mine, in one-third the time which would have been occupied in the usual mode, with a very considerable saving of money at the same time.

Although satisfied that, with our present knowledge of electrical forces, we can scarcely hope to adapt the electric light to any useful purpose, within the limits of any ordinary economy, or to apply electro-magnetism as a motive power, it is quite possible that we may, by a careful study of the primary laws of these forms of electrical force, arrive at new conditions which may enable us to apply them. The empirical mode of proceeding at present adopted is of the most hopeless character. The models of electro-magnetic engines exhibited have much in them which is exceedingly ingenious; but, although working well as models, they do not promise to work with regularity or economy on the large scale; and for the present we must rest content to burn coals in our furnaces rather than sine in our batteries.

Electricity—that power which, from its fearfully destructive force, was regarded as the manifestation of Almighty power, and which was placed as the emblem of might in the hands of the Olympian Jere—from which men still retreat in terror, has, by the force of human intelligence, directed in a philosophic spirit, been subdued to perform the most important tasks for man. Through space it passes, without note of time, to convey the expression of our thoughts and feelings. India by its means will soon be united with England, and the merchant in London may instantaneously communicate with his agent in Calcutta, or the lover with his mistress. Thus, breaking through the barriers of distance, remote lands will be united together. The march of civilization is in unison with the advance of science; and few things prove more convincingly the harmonious arrangements of Universal rule than the fact, that the physical agents which determine the condition of matter, which regulate the structural arrangements of the earth's crust, its rocks and its metalliferous deposits, and which mysteriously influence every organic creation, are destined to work upon the spiritual part of creation, and to produce psychological phenomena,—which shall result in the production of order and the spread of peace. Bring people together,—let them know one another,—they develop the latent good which is in every human breast. Thus the gathering of nations in the Industrial Palace of Hyde Park cannot but be for good; and those small instruments which are exhibited in its north-western gallery are world-embosoming in their influences, and must assimilate more closely the thoughts of those nations which they may bring into communion.

Electricity, again, has been made to perform for us more humble tasks,—to work in metal, and to measure the progress of time. Within the Exhibition all these appliances can be studied, and from the study of them much good must result.

In connection with this order of application, by interest, and also by position in the building, are the numerous contrivances adopted for ascertaining the laws which regulate terrestrial magnetism, and the adjustments by which the

mariner, guided by the magnetic needle, is enabled to traverse the pathless ocean, with the utmost certainty of arriving at his destination. The magnetic forces of the globe are subjected to constant variations, principally owing to the changes of temperature. The lines of equal magnetic intensity around the globe are very irregular, and are evidently the result of heat.

At the same place it is also found that monthly and daily variations occur; and it is important, in connection with the elucidation of the great phenomena of nature, that these should be accurately determined. Several instruments are exhibited which are employed for determining the variations over different parts of the globe; the most important being those of Mr. R. W. Fox, exhibited by Mr. Wilton. In those instruments the power exerted by the magnetism of the earth is weighed off in parts of grains with the most surprising accuracy; and by them Ross, Stanley, Becher, and others, have determined, in the most satisfactory manner, the magnetic intensity of those countries they visited in their arduous expeditions. The variations detected at the same spot have usually been determined by attentive observation; the number of vibrations made by a needle on either side of its zero point in a given time determining the force exerted by the earth's magnetism on the freely suspended magnetic bar. These researches were of exceeding delicacy, and even with the most practised observers they were liable to some errors. In the gallery of the Exhibition is an arrangement of the utmost ingenuity, in which the magnets are made to register their own movements. This is effected by reflecting a concentrated pencil of artificial light from the end of the bar upon some sensitive photographic paper placed between glass cylinders. The light makes a dark impression on the paper, and therefore any movement is very distinctly indicated. The oscillations of the magnet are horizontal; the motion of the cylinders, determined by a small clock arrangement, are vertical. A zig-zag line is therefore produced,—the variations of these from a standard line indicating the amount of disturbance. By means of this instrument, thus arranged, many magnetic perturbations, which would otherwise have passed unnoticed, have been detected. By an analogous arrangement, the conditions of the barometer and thermometer, for every moment of the day or night, are faithfully recorded. All errors of observation are thus avoided; and the same agency which produces the disturbance is made to record it. Light, the radiations from the sun, or any incandescent source, mark the movements; and to solar influence we are referred, by all the facts of science, to the probable cause for producing them. The consideration of this very beautiful application of our knowledge, that the radiations associated with light produce chemical change, naturally leads to the Photography of the Exhibition. Spread over various departments, Daguerreotypes and Calotypes, and other examples of the art, are to be found. England, France, Germany, Austria, and America, are equally ardent cultivators of photography. In the English department are a very extensive series of Daguerreotypes; possessing, however, but one novelty, which is to be discovered in the enamelled Daguerreotypes of Mr. Beard. The metallic tablets in these are covered with a transparent lacquer. The process of effecting this is not developed; but it is evident that heat is employed in diffusing the "enamel,"—and it certainly renders the picture permanent against the action of any ordinary mechanical force. For some years past, the Daguerreotype processes have advanced but little. The modes of preparation have been somewhat improved,—the delicacy of production slightly quickened,—many important physical facts discovered; but the art stands much where it was. Not so, however, with the processes on paper, and those on glass. In these a most marked improvement has taken place. Some examples of forest scenery, and picturesque bits, selected with artistic taste from "the ancestral homes of England," are perfect studies for an artist to dwell upon. The gradings of the lights and shadows are more harmonious than the usual, and the darker portions of the pictures are developed with much beauty of detail. These are the productions of Mr. Shaw, of Birmingham, who unites the skill of an artist with the experience gained by the long study of chemical science. The positives from glass negatives, executed by Ross and Thompson,

THE SCIENCE OF THE EXHIBITION.

of Edinburgh, are remarkable examples of the delicacy of this variety of sun-painting, and the artistic groups, by Mr. Hall of Edinburgh, of the Newbarn Salvemore, &c., together with many admirably selected bits, cannot but be admired for their truthfulness—they exhibit nature in those charming aspects the selection of which proves the ability of the artist and the refinement of his perceptions. In the French departments, M. Martens is the exhibitor of some photographs prepared by a process of his own on aluminised plates, which are first-class works of Art. The process employed is a modification of the Calotype as applied to glass tablets by the agency of albumen. The German and Austrian productions have each their beauties of a peculiar kind; but they have no novel features requiring any special notice. The American Daguerotypes are certainly very beautiful; the general tone of these productions being more of the mezzotinto style than those produced in either France or England. Many of the groups are exceedingly characteristic, and some of the selections of the scenery are remarkable for the perfection of their detail. The Hyalotypes, or photographs on glass, both positive and negative, (many of the positive pictures being coloured for magic-lantern slides), are a very pleasing application of the art. On the whole, we may regard the examples of sun-drawing exhibited as a very complete exemplification of the state of the art up to the present time.

Amongst the instruments which possess any character of novelty, those of M. Claudet, for determining the focus of lenses, and for adjusting the camera to the chemical focus for photographic purposes, and his arrangement for examining the quality of the solar rays, deserve especial notice. The peculiarities of these cannot be understood by descriptions merely; but by their adjustments, it is quite possible to determine with accuracy the action of the sun-light for so short a period as the thousandth part of a second of time. This scintillating Daguerrotype artist has appreciated the value of imparting visible information; and in many examples amongst his collection, he has given illustrations of the operation of the chemical, as distinguished from the luminous, rays of the sun,—the influence exerted by media,—and the dissimilar action of the most and the least refrangible rays of the solar spectrum.

From these we learn many very important facts, which appear to support the view that the luminous power and the chemical power (*actinism*) of the solar radiations are agencies united in action, but balanced against each other in the effects which they produce on natural phenomena.

Of late years much attention has been paid to Meteorological phenomena, with the hope of determining the laws by which the apparently inconsistent winds and the resulting weather are regulated. We have established observatories in all parts of the world in which records are carefully kept of almost every passing cloud. The temperature of the air, the pressure of the atmosphere, the hygrometric state of the gaseous envelope, the electrical condition of it, the directions of the winds, and many other points of importance are registered under the direction of competent observers. From the results thus obtained, Professor Dove has already deduced some important facts, and determined the existence of fixed laws regulating at least some of the atmospheric phenomena.

Instruments here from time to time been devoted for registering the above points. Professor Whewell of Cambridge and Mr. Follett Osler of Birmingham, have devised very complete anemometers and rain-gauges; Mr. Osler associating also some other registrations with his very complete instrument. In the Hall of the Polytechnic Institution, and at the Philosophical Institution of Birmingham, an opportunity is afforded of examining what has been done, and of comparing it with the very complete "Atmospheric Recorder," of Mr. Holland, which registers every breeze that blows, or shower that falls, upon the Industrial Building in Hyde Park. Without drawings it is quite impossible to describe, so as to be understood, the details of the arrangements. But some of its principles may be rendered easily intelligible. In the first place it will be understood that every fact is recorded by the machine itself, by means of a pencil passing over a regularly moving piece

of paper, which is carried onward by an attachment with an eight-day clock.

The barometer is of the siphon form, of large bore, and upon the mercury in the shortest leg is a float very accurately counterpoised, bearing only sufficient weight to enable it to follow the mercury in its rise and fall. It will be readily conceived that many plans might be adopted for correcting this with a pencil, which should mark every variation. The thermometric arrangement consists of ten mercurial thermometers, of a peculiar form, very accurately balanced, so that the slightest movement of the mercury gave at once a given degree of preponderance on one side or the other. A ship of wood is employed as the hygrometer; this is placed in a tube, through which the air passes freely; every elongation or contraction of this, indicating an excess or deficiency of moisture in the air, is in like manner registered. It will be, of course, understood that a piece of wood forms a very good hygrometer by absorbing moisture or parting with it readily. The electrometer is an insulated conductor, fixed on the highest convenient place, from which a wire is brought down to the instrument, and connected with a fixed disc, near which is placed a movable one. When a cloud charged with the electric fluid comes within the range of the conductor, the movable disc begins slowly to pass from the fixed disc to a spring, discharging each time a portion of its electricity; it then falls back to the first disc, and remains quiet until another electric cloud approaches; the moving disc carrying a pencil, records every disturbance.

The rain-gauge is placed on the top of the building; it is a foot square. The rain collected in this passes through a pipe into the building, and a float indicates the height of the water and regulates the motion of the pencil. The amount of evaporation going on is by a similar contrivance registered. The direction of the wind is recorded by another pencil which marks the course upon the paper throughout the whole circle of the horizon, or that portion through which it passes, and the force of the wind is indicated by the action of the aerial current upon a board one foot square fixed to the vane, and accurately counterpoised, so that the slightest pressure is at once indicated by the movement of the counterpoise. Thus is afforded a means of determining, with the utmost accuracy, every change in the weather, and by thus avoiding all the errors which arise from the carelessness or inaptitude of assistants, we may expect to arrive more satisfactorily at some important facts in climatology beyond those which we already possess. It is interesting to watch the little pencils moving to and fro, marking their zig-zag or curved tracks upon the paper, and to observe the peculiar association of one phenomenon with another. The very remarkable groups of instruments which we have been describing are amongst the most striking evidences of Science in the Great Exhibition. By appliances such as these we advance our knowledge and gain power over the phenomena of nature. An instrument by which the navigator is, by a very easy method, enabled to determine the position of the centre of a storm, called by the inventor, Lieut.-Col. Lloyd, Typhoidector, or storm-pointer, appears to be exceedingly useful. It is now fully determined that the great storms of the tropics are revolving masses of air, moving onward at a great rate. If a ship becomes involved in one of these, she is soon disabled, but by the investigations of the law of these storms by Lieut.-Col. Reid, an easy method of determining the direction of their movement is given, and thus the mariner is enabled to sail out of their influence. It is to facilitate this that Colonel Lloyd has constructed his storm-pointer. Strange things though meet us here; we have a Storm Indicator, in which beetles crawling out of the water, as is their habit when there is much free electricity, are made to ring bells; and we have Count Dami's Man of Steel, composed of many thousand parts, and these so contrived that from a figure of about five feet in height, it may readily be converted into one of eight. The ingenuity of these cannot be doubted; but we fear their utility is questionable. They are among the things which sometimes cause us to marvel at the variety of ways to which human invention is frequently applied without the probability of any satisfactory practical result.

THE SCIENCE OF THE EXHIBITION.

PART IV.

IN our rapid glances at the developments of science, as they are manifested in the efforts of thought and industry now gathered within our "palace all of glass," we have confined our attention principally to the productions of British skill. Much has been done towards the extension of abstract science to the useful purposes of life, but still more remains to be done; and we should learn to look upon the Great Exhibition as one of the resting places, from which in our ascent we can contemplate the triumphs of the past, and meditate upon the labours which yet remain to try the human mind. The ocean of knowledge has been ventured upon in frail, but skillfully managed barques, and some of the isles of truth, which stud its surface like stars of light in their beauty, have been discovered; but "a wilderness of heaving waters" is beyond the horizon; and from the crest of the wave upon which we rest, we see images of glorious promise for those who will essay the untried space from which yet higher treasures may be gathered to improve the condition of toiling humanity.

It now becomes an equally pleasing task to contemplate the Eastern side of the industrial palace, within which space those, whom we, from long habit, call foreigners, have so liberally displayed the evidences of their industry. If no other good were to result from the Exhibition, than that of bringing the nations closer together, of making men better acquainted with his fellow man, and thus destroying those national prejudices which are so many barriers against human progress, it would have done much towards the advancement of civilisation.

In passing carefully through the labyrinthine ways, between Tunis and Turkey on the one side, and the United States on the other, we have diligently sought to discover some novel application of science—something peculiar in its way—illustrative of some branch of study to which England might yet be a stranger. But we have found it not;—we confine to some of the disappointment, and we acknowledge some amount of pleasure. It proves, that notwithstanding the barriers of language—that in spite of still existing prejudices—the truth diffuses itself like an atmosphere over the old and the new continents.

Whether any law regulates the progress of human knowledge is a question of interest, which, however, we are not in a position to answer. There are nevertheless many curious phenomena connected with the advance of truth which appear to indicate psychological effects to be determinable in accordance to some general cause. When we find the electrolytic developed at the same time by Jacobi in St. Petersburg and by Spencer in Liverpool; the mystery of sun-drawing being discovered by Daguerre in Paris and by Talbot in this country; and many other examples of the publication of new truths at nearly the same time in countries widely separated from each other, and where previous concert was impossible, we are compelled to admit, at least, the general operation of almost occult powers, inducing to the development of facts new to human knowledge. Be this as it may, it is certain that no one country among those exhibiting their works, can claim priority on account of any new application of science. For varieties of industry, and for perfection in those varieties, the international juries were appointed; they have completed their labours, their reporters are now at work on their respective reports, and it will not be long before the world will know how they have performed their responsible duties.

Commencing our review of the continental section of the Exhibition, we are met first by the productions of the most singular people on the face of the earth—the Chinese. The inhabitants of the celestial empire had a science—probably an empirical science—in a high degree of perfection, while yet Europe was enveloped in the night of ignorance. The manufacture of porcelain, which is only now in its perfection familiar to ourselves, was amongst the earliest of their industrial Arts. Metallurgy, particularly mixed metal casting, has been practised by them with great success for many thousands of years. They have taxed and tortured nature to minister to their wants, and yield fresh food for their luxuries for ages, and yet now they figure amidst the gatherings of the earth, the exponents of a people who have stood still while all the world has been moving. In manufacture and in art they

have great capabilities, but they have made no progress. Their vases are of the same kind as adorned the halls of the wealthy in the 8th-Hang dynasty. Their ivory carvings are similar to those of T'ai-tong in 620, and their paintings are such as in the very infancy of art are to be discovered in other lands. Yet in one little corner of the area, occupied by China, is a little picture of a female bathor, doubtless a copy, in which there is a degree of perfection in drawing, in knowledge of colour, and in artistic effect, which proves how easily they could excel if they were stimulated to the trial. There is much of considerable scientific interest in the contributions from China. We learn something of the mineral produce of that country in the collection of the various materials from the great porcelain works of King-t'ih' Chin near the Poyang lake, employed in the manufacture of porcelain. We have a beautiful exemplification of their process of making pottery. We find that all the materials they employ are such as we possess, and judging from the appearance they are, most of them, inferior in quality to those which our potters employ. The naturalist might glean much information from the study of the series, but the products of the vegetable and animal kingdom are beyond our province. However, in the metal ten-pots, lined with earthenware, we see that our process, recently introduced, of canneling iron utensils is familiar to the Chinese. Their paper-hangings should be inspected, and we should remember that we owe this branch of manufacture entirely to the Chinese, and that the first attempts made in Europe were with a view merely to imitate those papers which were then imported and sold at an enormous price. The Chinese metal castings are most ingenious; they make their model of wax, place it in a box and cover it with sand, tightly packed on every side; the whole is then exposed to heat sufficient to melt the wax, and bronze is run in to supply its place. The Chinese compasses are curious, seeing that with this action the use of the magnet as a guide over the ocean or the desert, had probably its origin; and the models of pumps shown are interesting as illustrating the knowledge of hydrostatics possessed by the inhabitants of the flowery land.

Tunis has many remarkable features; rough manufacture united with beautiful form and an harmonious arrangement of colours, being curiously displayed. The Tunisian dyers have long been celebrated, particularly their red dye, as shown in the celebrated caps called *Beretti*. The mordant they employ is alum: much merit is attributed to the waters of the river, but it appears that the whole secret of their process consists in fitting their vegetable dyes by means of the sulphate of alumina, exposing the dyed goods to the chemical agency of their southern sun, and then streaming out, by immersion in the river, everything which is not chemically combined with the wool, cotton, or silk. It is interesting to examine the earth, rich in iron, and the lead ore from the mountains of Sissa, and the copper ore from the mountain of Geras; we gain thus knowledge of the distribution of minerals, which can rarely be obtained; and if instead of being dispersed in areas, representing kingdoms, the articles exhibited had been gathered into natural groups, the kingdoms being subdivisions, the educational character of the great Exhibition would have been increased a hundred fold. Incidentally, while dealing with the minerals of Asia and Africa, we should refer to a recent addition in Class I., on the English side, of copper ores, and iron, of remarkable character, from some high mountains in the depths of the deserts of Arabia Petros, which have only once been passed by an English traveller. The gypsum, the limestone, and the salt of Tunis are all deserving the attention of those who would really profit by this great gathering.

Persia contributes little of scientific interest; but Greece, in addition to a valuable collection of vegetable products, including a jar of honey from Mount Hymettus, sends a series of lithological specimens, which have much importance and classic association. The priors of the monasteries of Hymettus and Pentelicon contribute specimens of the marbles from those quarries on which the great sculptors of Athens exerted their genius. Upon such stones as these Phidias worked, and from these quarries came the wonders of the Parthenon. There is

also the Cipolino marble, from which the Columns of Antoninus and Faustina were built; and there are numerous examples of variegated limestones, many of which are very beautiful.

Some specimens of puzzolano, which is much used for hydraulic architecture, are important; and particularly as these are said to be equal to the celebrated Roman cement of Italy.

The first paragraph in the Catalogue of the Turkish contributions truly bespeaks their importance: "This collection of upwards of three thousand three hundred objects is arranged under the several divisions of Vegetable, Animal, and Mineral Kingdoms, and into two general classes, of Raw Materials and Manufactures." Under the head of manufactures again, we read: "The articles of manufacture, the produce of Turkish industry, forwarded for exhibition by the Turkish Ministry of Commerce, comprises about one thousand three hundred items; and the articles themselves illustrate, under the simple and intelligible conditions of this arrangement, the industrial progress, the arts, the costumes (and the varied materials of which these are composed), as they at present exist in some of the extensive dominions of the Sultan."

The inductive system thus adapted by an Oriental people, might have been worthily imitated by other nations. This series can be read with facility, and instructive are the tongues of the trees and the sermons of the stones of the Ottoman empire. The dye woods are numerous. The grains and other vegetable produce are varied; and their balsams, resins, and pharmaceutical preparations of considerable value. The essential oils of Turkey are familiar to all; and the perfume of the "Attar Gul," while it has been the poet's theme, has been a wish to the perfumers of all Europe. Here we have the otto, and the oils of cedars and sanders, and violet and jessamine, and those fragrant essences, which combined, form the attractive secrets of British druggists.

We scarcely knew the mineral riches of Turkey before; but she brings us gold, silver, copper, iron, lead, and salt. The alumne exhibited are exceedingly curious and interesting; and the coal, pitch, bitumen, and liquid naphtha, are equally important. The clays are numerous, and to the lovers of the fumes of tobacco this original *meersolomon*, poetically called the "foam of the sea," will have a peculiar value. Amongst the large group of manufactured articles, we find numerous examples of weaving and filting, of tanning, and of dyeing, which should be carefully examined. The works in gold and silver, particularly the "taris," are curious examples of the delicate chasing and filagree work in which many of the oriental nations excel. The spoons in amber, the cup of Calcedony, the narguilles in silver, and the glass and china porringers, show much perfection in this character of manufacture. The iron manufacture of the East has been long celebrated; the Turkish *acmetar* has taken its position amongst the most celebrated weapons of oriental warfare; and some good examples of these blades are exhibited. On the whole the present condition of Turkish industry is well represented; but regarded with a view to elicit the aids derived from science, we are bound to declare that there are few. The perfection shown has been the result of slow gathered experience, a sort of traditional code which has passed from father to son through many generations. The systematic arrangements adopted prove, however, that the Turk might become an apt student in industrial science; and it is not improbable but that the interest felt in the city of the Sultan in this gathering under the auspices of the consort of the Queen of England, may have its influence in leading back to the East that kind of learning which has had a general bearing towards the western regions of the earth.

Nor are the productions of Egypt of less interest than those of Turkey. The beautiful vase of stalagmitic aragonite, and the blocks of the same, called in the Catalogue by the general term of *abalaster*, displays an ornamental stone of much beauty and novelty. The petrified wood, part of those forests in the neighbourhood of Cairo, which have, buried in the sands for ages, yielded up the carbon they once contained, to be replaced by silica, has much that is instructive in connection with the chemistry of natural substitution.

This nation of Lower Egypt and the native and prepared alums are alike illustrations again of nature's chemistry. In the manufactures we discover much of the same character as in Turkey—indeed, they may properly be included in the same list.

The contributions from Algeria are chiefly from the vegetable kingdom, but we have also some specimens of red chalk, of coral, and the Commission of Mines of Algiers and of Constantine have sent samples of various ores, and geological specimens and mineral products. There are yet three other portions of African produce in the Exhibition, but these have their place amongst the British Colonies. Western Africa has many curious products: lime made from bones burnt to ashes mixed with water and dried in the sun, used by those who spin, to keep their fingers dry, is one of those distinguishing characteristics which should not be overlooked; this is of course a phosphate of lime. The earthenware and the metal manufactures, and the bottles of galena and of antimony used to dye the cydres, are peculiarly African. The copper figures of the *Ashantees*, the gold ornaments from Cape Coast, and the glass beads from the same locality, are curious, though we suspect the glass beads to be of Birmingham manufacture, the trade for these with the western coast of Africa being very large. The Cape of Good Hope contributes skins, and ivory, and pearl; there is lead ore from Port Elizabeth, iron from Uitenhage, and graphite from the neighbourhood of Cape Town. In thus rapidly sketching of the characteristic productions of each country, it is hoped that it is understood that it is with reference to their value—scientifically—as pointing to new localities in which known substances are produced, and to their value as sources upon which the industry of the native population of each locality might with advantage be exerted.

We return to Europe, and here, in Spain, we have abundant examples of scientific application. There is much for the mineralogist and the botanist to study; for the practical miner to contemplate, and for the manufacturer to consider with care. The marbles contributed from the Royal Library of Madrid are numerous; here are the finest statuary marbles, and the Sierras produce many beautifully marked varieties. The Directors of the Mines are large exhibitors, and enlighten us on many of the products of the Spanish mines. Antimony, and silver, and lead, and copper are sent from several districts; amongst these are some good examples of the process of converting the double sulphuret of iron and copper (*copper pyrites*) into soluble sulphate of copper, by slow roasting; the process consists in stratifying the sulphur ores with carbonaceous matter, and setting fire to the pile; both the sulphur and copper combine with oxygen in the process, and sulphate of copper (blue vitriol) being formed, it is dissolved out, and the metal precipitates from the solution by the electro-chemical action of iron. The ores of iron exhibited are numerous, and some of them are remarkably fine specimens. The most interesting, however, of the mineral products of Spain are the ores of mercury.

The mines of the Asturias and of La Mancha, particularly of Almaden, yield the largest quantity of cinnabar, sulphuret of mercury. Almaden is stated to furnish annually upwards of one thousand tons of ore. These are the most extraordinary formations of quicksilver in the world; the mines produce native mercury and the sulphuret, and, notwithstanding the mines of La Mancha have been actually worked for many centuries, they are still exceedingly productive. Black-lead, *plumbago*, or graphite, is produced in considerable quantities; and nickel and cobalt ore, the demand for which is every year increasing in this country, is found in some abundance in Utrera and Malaga. The *phosphoric* of Extremadura, of which good specimens are in the Exhibition, is of high scientific interest. A mountain of phosphate of lime exists in the wild part of this district. It was visited by Dr. Danbury, some few years since, with a view of ascertaining the capabilities for transporting a substance so valuable to this country. It was found to have very nearly the composition of the earth of bones, viz.—81.15 of phosphate of lime, and 14 of fluoride of calcium, it is, however, quite useless, the cost of carriage being far too great to render its use possible.

THE SCIENCE OF THE EXHIBITION.

The vegetable products of Spain are largely shown, and many of the manufactures of that country. The wine and oil jars will render the young some information on that mystery, the thieves of the Arabian Nights and the wine jars. Amongst the most attractive of the many displays of arms in the Exhibition, those furnished by the Royal Ordnance of Toledo are the most interesting. The swords of Toledo have long been celebrated, and some of those now exhibited display all the perfections of that celebrated manufactory. They are engraved, enamelled, and gilt, many of them most elaborately so, and it is said that the temper of the blades now in the Exhibition, is equal to any other made. There are many other examples, involving a very considerable amount of science, as the illustrations of dyeing, of the preparation of leather, of chemical and of metal manufactures, but our space forbids our dwelling on these.

Portugal comes forward, rich in vegetable products, particularly in woods and dye drugs. Their mineral products are few, but some of them of much interest. Their woven materials and dyed fabric exhibit much manufacturing skill, and their textile manufacture shows that much attention has been paid to the chemistry of pottery and of glass.

Rome contributes many objects of much interest, but an interest rather belonging to Art than to science. We have some examples of a vitrification effected by some chemical process, but this is not explained. Natural and manufactured asphalt, and specimens of the alum formations of the Roman States, are in this series.

Tuscany contributes many things of much scientific interest. The marbles, alabaster and lithographic stones of the states, together with the ores of copper, lead, and mercury, are well selected. The examples from the celebrated Borneo Lagoons, of Tuscany, which produce so largely the Boracic acid, and its salt, borax, are of much interest. New colours for encaustic painting are shown, but these are secret preparations, the scientific or practical value of which we cannot learn. The terra-cotta, and paintings on that ware, is curious, and the china from the manufactory near Florence, with the chemical glass, well illustrates the condition of these manufactures. Tuscany has ever been celebrated for her works in marbles, and these are well displayed, the celebrated *luncheon* marble, and the marble of Cipolino, together with a table from the bronzetto of Caldana, and columns of the same, with the capitals of the yellow marble of Sicuna, are much admired. But that which gives a prominent scientific interest to the contributions from Tuscany, is the series of beautiful wax models, illustrating most perfectly the galvanic system of the torpedo, or electric ray. These are most exquisitely copied from some of the most careful dissections which have ever been made of this extraordinary electrical arrangement. The beautiful arrangements of the cells, and their connection with the nervous system, may here be studied with the greatest advantage; rarely has so fine an opportunity presented itself, for acquiring a knowledge of that minute anatomy, which appears to lay open to us the processes of electrical excitation as connected with the phenomena of vital action.

Sardinia contributes many chemical products of much interest, amongst others quinine, beryllus, morphine, gluconate of soda obtained from the syrup of malborrice, and ergotine, the active principle of the ergot of rye, may be named. Some of the mixed metal castings are of an admirable character; and the bronze medals exhibited, which are stated to contain a tenth part of power, appear to show that there is as stated by the exhibitor, an advantage in employing this admixture: it is not however uncommon to use lead with bronzes to make the metal flow readily.

Switzerland exhibits in a most satisfactory manner its tributes to the competitive display of industry. There are not many of its works which require any especial notice in connection with science. Their clocks and watches, their woollen and other woven manufactures, their embroiderys, etc., are admirable illustrations of the applications of prior knowledge with all the advantages of native skill and industry. The specimens of their metal works, particularly their steel manufacture, is good, and the ingenuity displayed in the watch escapements and compensating balances is exceedingly

great. Their musical boxes are well known, but these are rather illustrative of mechanical skill than of the science of acoustics.

To attempt to do justice to the numerous beautiful applications of science which are exhibited in the departments of France is not possible within the limits of our essay. In their dyes they have availed themselves of all the knowledge which chemistry has afforded, and in the results we see the advantages of placing such men as Berthollet and Chevreul to provide for special departments of industry. The rich hues of the French silks, the brilliancy of their pigments, and the intense colours of their tapestries, are evidences of the most exact attention to the investigations of science. In ceramic art, again, we have the same evidence afforded us; the *Sèvres* porcelain displays the results of the investigations of Brongniart, and attest to the skill of Ebelman, who has at present the direction of that national establishment. In ornamental metal manufacture the celebrity of the French is great, and in the evidences afforded by the Exhibition we learn that it is not merely to the works of elegance that they have devoted their attention; in their larger works, as machines and manufacturing tools, they have displayed their sense of the importance of applying scientific knowledge to a useful end. The philosophical apparatus from France are numerous; the electrical and magneto-electrical apparatus are excellent; their optical apparatus, in many respects superior to our own, in proof of which we have only to refer to the beautiful dioptric apparatus for light-houses, exhibited in the west main avenue, and to the apparatus of Soleil for investigating the remarkable phenomena of the polarisation of light. Their optical glass is of the first class, and this superiority is dependent entirely on attention to chemical and physical laws, which the British glass manufacturer has, unfortunately, not yet learned fully to appreciate. We hope, however, the Exhibition will lead to greatly improved results in this respect. While on the subject of glass we must not forget the great novelty of flint glass, in which zinc takes the place of lead; it is exceedingly transparent, and in many respects a beautiful manufacture. The daguerrotype was a French discovery; all the great improvements in this photographic process have been made in this country. The ealotype is an English discovery, and it would appear that the greatest improvements in this process have been made in France. The results exhibited by Le Gray, Niepce, Martin, and others are of the most artistic character, and many of them exhibit effects which we have never before seen produced. The chemical preparations of France are too well known to require any notice beyond the fact of their being fairly exhibited, although some of the first class manufacturers have not contributed to the series. There is not, that we are aware, a department of industry which is not well represented, and there are several special applications of science which we hope yet to make the subject of copious attention.

Our remarks on France apply with equal force to the Zollverein. Within this great commercial union we find evidences of extensive progress in the Industrial Arts, the applications of science are numerous, and the results most satisfactory. Whether we examine the products of Prussia, or those of the smaller states, we must be struck with the marked attention which has been paid to the improvement of the more useful branches of manufacture. The character of education within those states is such that every child is made familiar with the great truths of science, and taught to apply the facts afforded by experiment to the improvement of the great realities of manufacture. Of the more refined application, the electrolyte, their galvanoplastic, of photography, and of the other applications of the discoveries in physical science, Germany in no respect falls behind.

The collection of minerals from Hungary, which are within the Austrian areas, are of much interest. The metallurgical processes exhibited are no less instructive. In chemistry the exhibitors from Austria are numerous, and many of the chemicals are of a very superior character. It is a curious circumstance that there are a great many exhibitors of lucifer matches. Here we have an illustration of the advantages of a scientific discovery. Schroder, of Vienna, discovered that he could, by a certain process, alter the

physical character of phosphorus without in any way producing a chemical change. The phosphorus which he prepares is but slightly combustible, but the great advantage of the discovery is that it has removed from the manufactories of instantaneous lights the liability to a frightful disease to which the men and women employed formerly were much subject. This allotropic phosphorus is now becoming an article of considerable importance in this country. The beet-root sugar—the ultramarine and numerous other chemicals attest the attention paid to the science of chemistry in Austria. The manufacture of machinery has not been hitherto a branch of industry much cultivated in Austria; but the few articles exhibited show the capabilities of the mechanic of that country. Natural history would find the Austrian contributions furnishing a large field for study. Metallurgy and metal manufacture is fully illustrated, and the finer kinds of Art-manufacture show the attention of the manufacturer to the teachings of Art and science. Bohemian glass is too well known to require a word beyond a renewed one of admiration at the exquisite colours produced in much of the glass exhibited.

Russia sends produce which is peculiar and interesting. The extraordinary display of malachite manufacture as doors, chimney-pieces, tables and vases, present a feature of a most remarkable character. In connection with this we have some beautiful sheets of copper, and beyond all question the most perfect sheet-iron that was ever manufactured. Amongst other characteristic manufactures, a series of ewers, jugs, etc., made of felted rabbits fur, should not be passed unnoticed; and their tanned skins of the Russian wolves, etc., the fur or hair being still preserved, are remarkable instances of a peculiarity in a scientific process which we have not yet reached.

Holland and Belgium, particularly the latter state, present numerous fine examples of their peculiar forms of scientific application to industrial purposes. In every example afforded by these countries we see the evidences of a thinking people. Denmark is a small exhibitor, but scientific application is particularly shown in a process called "Stylography"—a process bearing much analogy to our glyptography—and an electro-magnetic engine, of certainly a most ingenious construction. Norway contributes chrome-iron ores. Sweden maintains her position as the producer of iron of the finest quality; and cobalt and nickel are amongst the most important productions of these northern states. There are several of the independent states of Europe we would desire to examine with attention, but we must include them in the general expression of admiration at the zeal which has led our continental neighbours to incur the risk, the cost and the labour of transporting to our shores such valuable exemplifications of the efforts of thought exerted on the raw materials which nature has furnished to them in their respective localities.

The United States occupy the eastern end of the building, at which our imperfect sketch must end. Within the areas devoted to these important contributors it has been said as a reflection, there is a poverty displayed. If the articles are examined with proper views, it will be seen that they are rich in promise. The collections of metalliferous and of earthy minerals show that one of the most extensive mining districts in the world remains to be developed. Iron, plumbago, copper, lead, zinc, await the exerting power of Saxon industry, and coal comes ready to aid the labours of the excavator. Whether we examine the mass of red oxide of zinc sent with much labour and at an expense of 2000, to the Exhibition from the Sterling Hill Zinc Mine in New Jersey, or the collections of minerals which Dr. Feuchtwanger of New York exhibits, we see these evidences. Beyond this exhibition of natural products, we find in the manufactures every indication of the exercise of original minds, which must eventually exert a mighty power over the productions of nature. As the most striking exemplifications of science shown by the United States exhibitors, we cannot but refer to the dissecrations, which are certainly superior to any others in the exhibition; and those beautifully perfect pictures on glass, to which the name of *hyalotypes* has been given.

In proof of the good feeling of the exhibitors from the United States, even as the Exhibition is advancing to a close, they send us fresh contributions. Science and its useful applications are well illustrated in these; numerous agricultural implements of improved construction, and peculiarly fitted for the country in which they are to be employed, have been forwarded; an ingenious adjunct to the ruling machine for ledgers, by which the pens are lifted, and a paging-machine, printing the numbers on both sides at once, are exceedingly valuable. From the vegetable kingdom they contribute a peculiar moss, found in the Southern States, which is of exceeding toughness and strength; this is employed for all the purposes of the upholsterer for which hair has been generally used, and it appears capable of being manufactured into ropes and matting, which quite equal the coarser-out fibre; it is found most abundantly in the southern parts of the Union, completely involving the trees in its wild growth. In addition to these stores, the lard-oil and the stearine manufacture, which is carried on so extensively in the United States, is well illustrated, as is also the manufacture of soap. We have omitted all notice of the variety of fossil remains, which illustrate many of the rock formations in America, of great scientific interest; these can scarcely be regarded as industrial, and are not to our present purpose.

The imperfections of this review of the Science of the Exhibition, arise from the numerous subjects laid out for examination. Many of much importance have necessarily escaped the attention they deserve, and some have been entirely missed in the process of selection, which are of high merit. Even now some are remembered which we could still desire to include in our essay. This is not now possible, suffice it then that we solicit all to believe we have made our selections without favour, and where we may have failed to be judicious in our choice of examples, the imperfections of our knowledge must be the excuse we offer. In the Exhibition we perceive the germs of lasting good. Believing that the entire world, from China in the east to Chili and California in the west, will feel the exciting tremors of vitality which spring from the industrial heart of the world in 1851, beating within the Crystal Palace of Hyde Park, we content ourselves, in conclusion, with that excellent maxim chosen by the illustrious Prince, with whom the good, and being good—great thought—had birth, to teach to man exertion, and to temper it with humanity.

"Say not the discoveries we make are our own; the germs of every art are implanted within us, and God, our instructor, from hidden sources, develops the faculties of invention."



THE HARMONY OF COLOURS.



By Mrs. MERRIFIELD.



DIDSON observes, in one of his *Essays on the Pleasures of the Imagination*, "Our sight is the most perfect and delightful of all our senses." "There is nothing," he remarks in another essay, "which makes its way more directly to the soul than beauty,—among the several kinds of beauty, the eye takes most delight in colours," and he even thinks "the ideas of colour are so pleasing, and so beautiful to the imagination, that it is possible the soul will not be deprived of them after its separation from the body, but perhaps find them excited by some other occasional cause, as they are at present by the impressions of the subtle matter on the organs

of sight."* Although we may not feel disposed to adopt these opinions, in their fullest extent, the delightful and fascinating power of colours must be acknowledged by all. Their influence upon the English school of painting has been most decided, and has imparted to it its distinguishing characteristic. The English painters have long been colourists, but English manufacturers, as a class, have yet to learn that the laws relative to the harmony and contrast of colours are of universal application; that whether a picture is to be painted, or a few pieces of coloured silk or cloth are to be exposed for sale, the favourable impression made on the spectator or purchaser is in proportion to the extent to which these laws have been observed, and that the beauty of a colour depends less, perhaps, upon its individual purity and brightness, than upon the skill with which it is contrasted with others.

When the impressions of wonder and delight, which we feel on the first view of the interior of the Crystal Palace, have passed away, and the mind becomes capable of attending to details, we are sensible of a more pleasing and tasteful arrangement of colours in that part of the building appropriated to foreigners, than in the department assigned to the exhibition of native and American productions. The object of

all the exhibitors is the same, namely, to set off the articles exhibited to the greatest advantage, and to attract the attention of the spectator; but where coloured goods are displayed, we find the efforts of the various parties have been attended with different results. The harmony and good taste, as regards colour, with which many of the foreign productions are disposed, suggest the prevalence of some system by which the exhibitors have been guided in arranging the space allotted to them.

In point of elegance of design, harmonious arrangement of colours, and tasteful display, the French, considering the variety of works which they exhibit, excel all others. The Austrians (under which term the inhabitants of the Lombardo-Veneto are not included) and other Germans, although in advance of the English, have not yet attained the harmony of the French in the arrangement of colours. In all these countries we know that schools of design have long been established, and the scientific arrangement of colours is an object of sedulous study among all persons connected with the arts of design. But it is somewhat surprising to observe the harmony of colour which prevails in the productions of Turkey, Tunis, and the Asiatic nations; for, taking into the account the state of education in those countries, we cannot ascribe this harmony to a scientific knowledge, but to the custom which obtains generally in the East, of following the traditions of their ancestors. The fact is, however, a proof that the harmony of colours—of the more simple and positive colours, at least—was formerly well understood, and the perfect harmony of the architectural paintings of the ancient Egyptians, of the tombs of Xanthus, and Etruria, and the decorations of the Pompeian Villas, show that this knowledge has existed from a very remote period.

Excellent as the English have proved themselves to be, not only in the sciences but in the arts, it is universally, although reluctantly admitted, that in the arrangement of colours they are not equal to their continental neighbours. This is apparent on a cursory inspection of the Great Exhibition, where the English goods appear to be arranged generally without any regard to the harmony of colours. The trophy of Messrs. Keith & Co., in the nave, is very defective in harmonious arrangement, and the defects are rendered more apparent by its prominent situation. In the first place the colours are all bright and positive, and the eye finds no neutral or quiet hues on which to repose. In the second place, the arrangement itself is bad; for we have the disagreeable impression of light blue next to crimson. Defects like these would have been obviated by a knowledge of the laws which govern the harmony and contrast of colours.

The harmonious arrangement and contrast of colours is not arbitrary, or absolutely dependent upon taste, but is governed by fixed laws, in the same manner as the other branches of natural philosophy. A "good eye," as it is called, may, indeed, greatly assist, but nine times out of ten the good eye will be found to mean the educated eye. All persons have not equal power of analysing their thoughts, so as to perceive accurately the whole chain of ideas which have led to certain conclusions; they are scarcely conscious of the intermediate state between the first impressions and the ultimate decision, and the "good eye" frequently receives credit for what has been, in fact, a mental operation.

The laws relating to the harmony and contrast of colours have been developed by M. Chevreul, professor of chemistry to the French national establishments of the Gobelins, Beauvais, and La Savonnerie, and they have been studied in France, less or more, by all connected with the arts of design; and, judging from the specimens we have seen, with more success by the industrial artist, than by the student of the Fine Arts.

It is much to be regretted that the subject is not more studied in England, where the arrangement of colours is too frequently looked upon merely as a matter of taste; and when we consider the large class of persons to whom this knowledge would be useful, it really appears astonishing that it should be so little cultivated. Not only would the manufacturers of articles of clothing and furniture benefit by this knowledge, but the wholesale and retail vendors of the goods,—a very numerous class of persons,—as well as the upholsterer, house-

* See the Spectator, Nos. 411, 412, 413.

THE HARMONY OF COLOURS.

painter, decorator, and paper-hanger. To these may be added the large class of artisans employed in these trades, all of whom would profit by attending schools of design, or where that is impracticable, by learning the principles of the harmony of colours from their employers, together with the mechanical part of the different trades.

The good influence of the Schools of Design established in this country is, however, in spite of the defects alluded to as regards colour, clearly perceptible throughout the English department, and, if, in some things, the execution falls short of the design, it must, in many cases, be attributed to the nature of the materials employed, to the deficient education of the artisan, or to a false taste in the manufacturer, which is shown by changing the design, or adopting part of it only under the idea that by so doing, they are conforming to the taste of the public. But the public taste is, perhaps, better than is generally thought. At all events, a fair trial should be given it, by presenting to it only what is good and excellent of its kind. There is, in fact, no better way of improving taste than that of placing good examples constantly before the eyes. The influence of habit is everywhere felt and acknowledged, and the eye, accustomed to contemplate the best productions of art, will not tolerate those of an inferior order.

Unlike most other buildings, the beautiful edifice of Mr. Paston, from its vast extent, the lightness of its construction, and the quantity of light which it admits, does not interfere with the arrangement of colours on the walls and counters. For practical purposes the effect of the interior of the building resembles that of the open air. It is perhaps the only building in the world in which *atmosphere* is perceptible, and the very appropriate style of decoration adopted by Mr. Owen Jones has added greatly to the general effect of the edifice. To a spectator seated in the gallery at the eastern or western extremity, and looking straight forward, the more distant part of the building appears to be enveloped in a blue haze, as if it were open to the air, the warm tint of the canvas and roof contrasts with the light blue colour of the girders into which it is sensibly lost, and harmonising with the blue sky above the transept, produces an appearance so pleasing, and at the same time so natural, that it is difficult to distinguish where art begins and nature finishes. The busy groups in the nave below, while by their movement they give life to the scene, contrast by their broken and motley colours with the cool and serene effect of the upper part of the edifice.*

The quiet and retiring colour of the edifice allows full scope for the introduction of lively and powerful, and especially of warm colours, into the lower part of the building, but much of the agreeable impression made on the spectator, and in some degree the interest of the exhibitors themselves, depend on the judicious arrangements and distribution of the colours. Let us see now in what manner this has been accomplished.

To prove the importance attached by some of our continental neighbours to securing the best possible disposition of the articles exhibited, it will only be necessary to mention, that in the Zollverein, and some of the other foreign departments, the arrangement of the different articles was entrusted to the superintendence of a decorative artist and his assistants†. The successful results of employing a person conversant with the subject are apparent throughout the Zollverein courts: and the prevalence of a system of arrangement based on scientific

principles is everywhere perceptible, from the display of the most costly velvets and broadened silks, to the tasteful disposition of gloves and balls of cotton. It is probable that the same kind of superintendence was also observed in the French and Austrian departments.

In order to trace out the system on which the arrangements of the continental decorative artists were founded, I made notes of the succession of colours in the spaces allotted to nearly 200 exhibitors, foreign and British, and from many of these notes, I afterwards made coloured diagrams. I shall endeavour to place before the reader the result of this investigation, and to show the principles by which the foreign decorative artists were guided.

Although the principles relating to the harmony and contrast of colours are equally applicable to the highest branches of Art, and to the arrangement of a few skeins of coloured silk, there is an important difference in the position of a painter and a decorative artist, which must not be overlooked. The former selects the whole of his colours, and arranges them according to the effect he wishes to produce, and the laws of good colouring. The task of the latter is in some respects more difficult, inasmuch as he frequently finds it already begun by others before his services are required. The apartments, for instance, may be papered or painted, or certain furniture may have been purchased. In this case his skill must be exercised in harmonising what remains to be done with the part already executed. The decorators of the different counters in the exhibition are in this predicament;—they are furnished with materials of certain colours which they must not only arrange so as to display their beauty of color and texture to the greatest advantage, but must take care that they are not injured by the proximity of other coloured objects. In this respect their task resembles that of the "hanging committee" of an exhibition of pictures. Our good or bad opinion of an artist's colouring will frequently be influenced by the pictures which hang near his work. It is well-known that if a picture with a very warm effect is hung next to one of a colder tone, the latter will appear still colder to a person who has been contemplating the former. On the other hand, if the cold picture is looked at first, the other will appear unusually warm. In the exhibition of the foreign productions, and of many of the British, an injurious effect which might arise from the vicinity of the coloured articles belonging to other persons, is obviated by isolating the spaces appropriated to each exhibitor, by means of canopies and dispartes, which in the foreign departments, are of rich or subdued colours, according to the nature of the goods to be exhibited.

All arrangements intended to attract the eye must be, in some degree, symmetrical. "The principle of symmetry," observes M. Chevreul, "has much influence on our judgment in many cases in which we do not recognise its operation," and this symmetry of form may be affected by light and shade, and colour. The consideration of form, independently of these two influences, is foreign to the present subject. I have before alluded to the good taste with which some of our continental neighbours, especially the French, have arranged the different articles they exhibit. In one respect, however, the English have an advantage over the foreign exhibitors of the ground-floor of the building, namely, in the superior height of the cases, or stalls, in which the dress and furniture fabrics are displayed. By this arrangement a greater quantity of light is admitted; and, where goods of large patterns, such as furniture damasks, are to be exhibited, the designs are in consequence shown to much greater advantage.

With regard to light and shade, it may at first sight be thought that they have no claim to consideration, when treating of the arrangement of colours. They however comprise an important part of it; for all colour is to some extent a deprivation of light—light colours are allied to light, dark colours to shade. To be satisfied of this fact, it is merely necessary to view colours contrasted with white, in a declining light, when the degree in which they are removed from light, and approach to darkness or shade, will be apparent. The attainment of the power of judging to what extent colour is a diminution of light, is an object desired by all engravers; and it is to an

* Mr. Owen Jones's coloured decorations of the building in Hyde Park are a convincing proof of his intimate knowledge of the laws regulating the harmony and contrast of colours. He will be observed that, in painting the roof, he has not introduced yellow which, next to orange, is the most exciting colour to the eye, and should therefore be admitted in small quantities only. The proportions in which the primitive colours are found to neutralise each other are—3 of yellow, 5 of red, and 7 of blue. The pale sky blue on the upper part of the building would neutralise but a small portion of yellow or orange. Mr. Jones, therefore, placed white of a warm tint next to the blue, knowing that in conformity with the laws of the neutralisation, the white tint by their opposition to the blue, would be slightly tinged with the complementary colour (pale orange) and thus perfect harmony would be produced, by one of the most beautiful contrasts in nature—namely, sky blue with the warm tint of delicate orange, which is frequently met in clouds. The red stripes beneath the girders are only seen on looking upwards from below, and from being in shadow they do not strike forcibly on the eye.

† Mr. Chas. Möller, and Mr. Franz Köhler.

AS EXEMPLIFIED IN THE EXHIBITION.

accurate perception of this, that the superior excellence of the best modern engravings is to be attributed. In the arrangement, therefore, of goods of different colours, and of different shades of colour, due regard should be had to the symmetrical dispositions of the lights and shades; that is to say, to the agreeable arrangement of the light and dark colours. This point has received no less attention from the foreign exhibitors than the arrangement of their colours. By some of them, the different pieces of goods are disposed alternately, so as to prevent the effect of dark and light; this arrangement prevails very generally, and may be traced from the richest and most expensive fabrics to the specimens of coloured leather, wool, and threads, and to the paper-hangings, and carpets on the walls. In other arrangements, black and white are disposed at regular intervals, the coloured goods being placed between them, as in some of the cases in the Austrian department. Sometimes the dark fabrics are suspended at the ends, the lighter and brighter goods being arranged in the centre. Again, where the greater part of the goods consist of dark colours, such as broad-cloths, a few pieces of lively colours are placed at regular intervals. The same arrangement may be seen in the horse-motors, the greyish white tint of which is alternated with a few bright colours. When the general colour of the fabric is dark, relief is given by light coloured canopies; where, on the contrary, the general colour is light, or figured designs are exhibited, the arrangement is reversed, and the light colours are surrounded with dark and rich velvet canopies. Some of the articles, perhaps, consist of fabrics of one uniform colour, some of figured goods on light grounds, these are arranged with very pleasing effect, alternately, the plain (*i. e.* not figured) goods being considered as darks, the figured as lights. Sometimes the rich effect of velvets is increased by their being canopied with shawls of light and elegant designs.

The value of the quiet and semi-neutral colours in giving repose to the eye, and enhancing, by contrast, the beauty of rich and bright-coloured silks and velvets, is fully understood by the French, whose splendid display of Lyons silks and velvets, in the gallery, appears to the greatest advantage.

The beautiful Genoa velvets are, from the deficient quantity of light admitted into the cases in which they are displayed, not seen to such advantage as the French.

The velvets of the Zollverein are arranged with a very happy effect, somewhat on the principle of the rainbow or prism, thus:—

| | | | | | | | |
|----------------|----------------|--------|----------------|---------------|--------------|---------------|-----------------|
| Dark brown. | Dark olive. | Black. | Dark green. | Dark blue. | Dark red. | Dark grey. | Dark yellow. |
|----------------|----------------|--------|----------------|---------------|--------------|---------------|-----------------|

and, with a little variation, thus:—

| | | | | | | |
|-----------------|----------------|----------------|---------------|--------------|---------------|-----------------|
| Dark yellow. | Dark olive. | Dark green. | Dark blue. | Dark red. | Dark grey. | Dark yellow. |
|-----------------|----------------|----------------|---------------|--------------|---------------|-----------------|

Among the most elegant and harmonious arrangements, both with regard to form and colour, may be mentioned that of M. Terrier, in the French department. The goods are suspended in three rows around the three sides of the case; the upper row consists of light and dark, but lively, colours, alternately; the second row consists of quiet semi-neutrals; in the third and principal row, the dark colours are arranged at the sides, and the more brilliant colours in the front and centre; but they are disposed with so much attention to gradation of tint, from the dark colours at the side, to the lightest in the centre, and, at the same time, with so much harmony, as to attract general admiration. Many of the cases in the Zollverein are also worthy of attention for their graceful disposition, and for the harmony of the colours.

In speaking of the harmony and contrast of colours, as exemplified in the Exhibition, the arrangements have, in many cases—especially where they have been illustrated by diagrams—been considered merely as abstract colours, without a polished surface, and without reference to form; it will, however, be easily understood that the effect of the colours may be much modified by the judicious disposition of folds, which not only produces variety, but adds to the beauty of the stuff, by the play of light and shade, and reflection.

The foreign decorative artists have availed themselves constantly of the harmony of contrast; where, for instance, the goods are each of a single, lively colour, they have produced variety by means of figured canopies and draperies; where, on the contrary, the goods are of light materials (such as muslins) and are covered with floral designs, plain-coloured canopies and fittings (sometimes of rich materials) are employed; and occasionally the colours are concentrated and brought to a focus by the judicious introduction of a well-assorted pile of plain muslins and crapes, of pure colours, the surfaces of which, having no lustre, are seen in their proper colours.

In the gallery there is an assortment of French muslins, very tastefully arranged under a lofty canopy of blue (nearly the colour of the girders), combined with a little red and white. Considering its vicinity to the blue in the roof of the building, the proportion of blue in the canopy appears to me too great. The arrangement would, I think, be much improved by making the principal part of the canopy white, and enlivening it by a small quantity of blue, and a little red.

Another instance of the care taken by the French in the arrangement of their goods to the best advantage, is to be found in an assortment of black silks, also in the gallery. In order to obviate the sombre appearance of the black, variety and vivacity have been given by the introduction of a few pieces of orange-coloured silk. The French, in their most trifling arrangements, never seem to lose sight of the principle of the contrast of colours. The feather brushes, for instance, are coloured and arranged with artistic skill. In some, the outside feathers are red, while those in the centre are green; in others the outside is green, and the middle red; in others again, blue is contrasted in the same manner with orange. It is curious to contrast these harmonious arrangements of colour with the crude and unpleasant combinations on some English sheepskins.

Harsh and inharmonious contrasts of colour are, in the foreign departments, sometimes avoided by the interposition of rich figured or striped goods of different, but friendly colours, which conduct the eye agreeably, and gradually, from one contrasting colour to the other.

The arrangement of different pieces of plain coloured goods, so as to present an agreeable assortment of colours, is not attended with the same difficulties as those which are experienced in decorating buildings, or in the manufacture of carpets, or printing of fabrics, because the piece goods being separate and movable, their arrangement may be varied at pleasure.

As an instance of defective arrangement of British plain coloured stuffs, where there was ample room for improvement, may be mentioned that in the following diagram. The shaded parts represent the dark colours:—

| | | | | | | |
|---------------|----------------|----------------|---------------|--------------|---------------|-----------------|
| Dark blue. | Dark olive. | Dark green. | Dark blue. | Dark red. | Dark grey. | Dark yellow. |
|---------------|----------------|----------------|---------------|--------------|---------------|-----------------|

Here we have black, dark blue, and sea-green, in succession; supple blue between two sea-greens, sea-green between black and blue—all unpleasant combinations of colour. The dark and light colours also are arranged indiscriminately without any regard to effect.

THE HARMONY OF COLOURS.

The following arrangement of the same colours will be found more agreeable :—

| | | | | | | | | | | | | | | | | | | | |
|------------|---------|----------------|--------|--------|-------------|----------|-------------|---------|--------|----------|--------|-------------|----------|-------------|--------|---------|--------|----------|------------|
| Dark blue. | Orange. | Sapphire blue. | Black. | Green. | Dark brown. | Scarlet. | Blue green. | Yellow. | White. | Reddish. | Black. | Blue green. | Scarlet. | Dark green. | Black. | Violet. | Green. | Scarlet. | Dark blue. |
| | | | | | | | | | | | | | | | | | | | |

In this arrangement the darks and the brilliant colours, such as orange and scarlet, occur at regular intervals; all the inharmonious contrasts of the first diagram are avoided, and the colours are arranged, as nearly as the materials will permit, according to the laws of contrast. Light and dark blue are opposed to orange; scarlet is contrasted with green, and green with violet.

Another defective arrangement consisted chiefly of reds and blacks with one green, yellow, and russet; the last three of which are, with very bad taste, placed in one corner. The following would be an improvement :—

| | | | | | | | | | | | | | | | | | | | |
|--------|------|--------|------|--------|------|--------|---------|--------|--------|--------|--------|--------|------|--------|------|--------|------|--------|------|
| Black. | Red. | Black. | Red. | Black. | Red. | Black. | Yellow. | Black. | Green. | Black. | Green. | Black. | Red. | Black. | Red. | Black. | Red. | Black. | Red. |
| | | | | | | | | | | | | | | | | | | | |

Not only is the effect of dark and light obtained by this disposition, but symmetry also, from the central position of the isolated colours, which are so arranged as to offer no inharmonious contrast. These examples are sufficient to show how much the arrangement of goods of different colours may be improved by a little attention to the contrast of colours, and to light and shade.

Besides form, light and shade, and colour, there are other principles which must be considered in the decorative arts, namely, fitness for the end proposed—repetition, and variety. With the first, the subject now under discussion, has little or no connexion; the importance of the second and third has been always acknowledged by all who study design.

The principle of *repetition* is observed in architecture, when both sides of a building, of a door-way, or of a window, correspond; it is observed in pictures or coloured decorations when the same colours are repeated in different parts of the design; if, for instance, the north and south sides of the Crystal Palace had been different, the general effect would have wanted the symmetry which is found in the uniformity of the building by the repetition of the lines. In the same manner, the repetition of the colours in a picture adds greatly to its beauty and harmony; a single spot of colour is looked upon by artists as a blot. The last diagram will show the advantage of attending to this principle in decoration.

If the repetition of forms and colours in works of art is considered a beauty, perfect uniformity is, on the contrary, a defect. The eye requires *variety* also. How much less beautiful would the Crystal Palace have been, had it consisted of the nave or transept only! Whereas, by placing these at right angles to each other, the principle of repetition is kept in sight, sufficient uniformity is preserved, and variety is obtained by the open space in the centre of the cross occupied by the sparkling glass fountain. And here it may be observed, that, whenever it is wished to give one part prominence over others, that object should not be repeated either in form or colour. In the exposition of goods for sale, this should never be the case; the object in all arrangements of this kind being to place the whole of the goods exhibited in the most favourable point of view.

In pictorial arrangement variety of colour is obtained by the introduction of different hues of the same colour, and of different degrees of brightness. For example, although it is proper to repeat certain colours, as red, for instance, it is

not necessary that all the reds in a picture should be of a bright vermilion colour; on the contrary, the picture will gain in beauty if one should be of a dull earthy red, another bright red, a third crimson, and so on through all the scale of colour. This principle is acted upon by all the best colourists. I will mention one instance only among the old masters. In a very fine picture by Titian in the Church of Sant' Afra, at Brescia, there are eleven figures or parts of figures; The Saviour is dressed in a lake-coloured drapery, the lights of which are pink,—he has loose upper drapery of dark rich green. The figure on his left is dressed in light warm green. The dress of the woman is light yellow shaded with blue, her ample upper drapery is a rich and dark maroon. Another figure is dressed in green, and two others in different shades of red, inclining to maroon and crimson. The blue shades of the woman's dress are repeated in a blue ash over the red drapery of another figure, and in the dark blue of the sky. The light yellow is also repeated in two other parts of the picture.

Thus, out of the eleven figures, four are dressed in red, and three in green; and yet, while the principle of repetition has been acted upon, a due regard to variety has been observed. Among modern artists we need only refer to Sir Charles Eastlake's beautiful scripture-piece in the Vernon Gallery, in which some part of the drapery of six figures out of the eight, which the picture contains, is of a red hue, and yet great variety is preserved. We find this principle carried out in the foreign arrangements, in which red is frequently the prevailing colour; but while the red tint is clearly perceptible at proper intervals, the individual hue of each piece of stuff is so varied that all monotony is avoided.

The manner in which the principles of repetition and variety are recognised and acted on in the foreign departments, will be seen by the following diagram. In the space allotted to a manufacturer of Kagenfurt, the principal colours are scarlet, orange, black, white, blue, green, and some of the semi-neutral colours; they are arranged with excellent effect thus :—

| | | | | | | | | | | | | | | | | | | | |
|--------------|----------|--------|--------|-------------|--------|--------------|--------|-------------|--------|--------------|--------|------------|--------|---------|--------|--------|-------------|--------|------------|
| Blue (dark). | Scarlet. | Black. | White. | Dark brown. | Black. | Light brown. | Black. | Dark green. | Black. | Light green. | Black. | Dark blue. | Black. | Orange. | Black. | White. | Dark green. | Black. | Dark blue. |
| | | | | | | | | | | | | | | | | | | | |

In another arrangement the pieces of cloth are so disposed that the blacks and very dark colours occur about every fourth piece, the lighter broken colours being arranged at the ends, the brightest and lightest in the centre.

Another means of producing contrast and variety, of which some of the exhibitors in the Zollverein department have availed themselves, is that of the opposition of cold with warm colours. These are further contrasted by the cold colours being treated as lights, and the warm colours as shades, and vice versa. The broadcloths of Messrs. Kettwig & Co., are thus arranged :—

| | | |
|--|---|--|
| Warm dark Colours, and cool light Colours alternately. | Cool Colours, Dark and light alternately. | Warm dark Colours, and cool light Colours alternately. |
|--|---|--|

The same attention is paid to the proper contrast of colours, by avoiding harsh and inharmonious oppositions, and while sufficient bright colour is introduced to produce a rich effect, the value of this bright colour is enhanced, and repose is given to the eye, by the introduction of dark and semi-neutral colours. Addison remarks in the essays before quoted, that "where the colours of a picture are well disposed, they set off one another, and receive an additional beauty from the advantage of their situation." The same remark is applicable to all the decorative arts which depend upon colour for their effect; the degree of pleasure received in contemplating them, as has been before observed, regulated more by their

AS EXEMPLIFIED IN THE EXHIBITION.

arrangement with regard to each other, than by the absolute beauty and purity of the colours themselves.

After a general survey of the arrangements of coloured goods in the French, Austrian, and Zollverein departments, some of the principles by which the decorators have been guided become apparent. The principles of symmetry, repetition, variety, and harmony in the contrasts of colours, can be traced by an educated eye.

The general colour of the building being light and cool, it contrasts well with the positive colours of many of the articles exhibited. The prevailing colours of the fabrics exposed to view are rich and warm, and these are set off by the strong darks and semi-neutral colours with which they are surrounded. The favourite contrast, and that which pervades all parts of the building, is green and red; even in the Chinese department the pictures with ruby-coloured grounds are hung on a green paper, and the counter is covered with red. In the Indian department, also, the same contrast is found; on the carpets crimson is contrasted with green; the furniture of one of the beds is scarlet lined with green, the quilt is green lined with scarlet. In the French and Austrian departments the red harmonises with the green; this is not always the case in other parts of the building, where crimson is frequently placed by the side of cool green, and Mr. Monteith presents us with a piece of cotton print in which scarlet is contrasted with very warm green, the effect of which upon the eye is so dazzling as to be almost painful. Indeed, the general appearance of the court in which the cotton goods of this manufacturer are exhibited is far too red, and his combinations of red with green are generally inharmonious. The brilliant colour of the Turkey red dye, which Mr. Monteith produces in such perfection, would appear to greater advantage if contrasted with green of a colder and more subdued character.

Some of the combinations of colour in the Tunisian department are very harmonious. We see dresses of crimson lined with dark green, others of green lined with crimson; here a lilac dress contrasted with green; there a crimson dress lined with citrine.

If, however, the general impression is that the British goods are not arranged with as much taste as the foreign, we are happy to say there are among the former, many instances of tasteful arrangement, and of well-assorted colours. Among the best may be mentioned the mixed fabrics of Messrs. Brown, and Messrs. Akroyd of Halifax; and of Messrs. Schwann, Kell & Co.; the furniture prints of Messrs. Swainson & Dennys, of Ripley & Sons, Fry & Co., Crocker, Law & Sons, Englis & Wakefield, and Mr. C. Hooper's broad-cloths, in which blacks are disposed alternately with colours. The space occupied by Mr. Winfield's (of Birmingham), hardware, is also arranged with much taste, and attention to effect.

If the task of the decorative artist is attended with difficulty, that of the carpet weaver is so in a greater degree. The former may alter his arrangement if he finds it inharmonious; but the latter has no resource but to let his work remain as it is, or to begin it again. The circumstance of a single thread being a little too dark or too light, will be sufficient to destroy the harmony of the design.

The effect of many of the carpets of English manufacture when viewed from the opposite side of the building is rich, but—

"To Chinese looks enchantment to the view."

a nearer inspection—and it is to be remembered that carpets are intended to be placed near the eye—destroys, in many cases, the pleasing effect, and the arrangement of colours is found to be harsh and discordant, wanting in that which contributes so much to the beauty of all colouring, the presence of middle tints, and of those soft and agreeable broken colours which give repose to the eye, uniting the extremes of light and dark, and harmonising the contrasting colours. The great difference between the pleasing arrangements of colour in the French carpets, and the harsh combinations in the British, appears to me to arise not only from the more skilful contrasts of colour in the former, but also from a mechanical

difference in the mode of execution, which I shall endeavour to explain.

If the same design were furnished to a French and to an English carpet weaver, it would be more than probable that the production of the former would possess the harmony of the design from which he worked, while that of the latter would be wanting in mellowness. The reason is this: in the best Brussels carpets of British manufacture, it is seldom that more than three or four shades of the same coloured wool are employed,* while the weaver of the carpets of Beauvais and La Savonnerie is furnished with between twenty and thirty shades; even for furniture carpets, the number of shades is generally ten. The weaver is consequently able to unite his colours by an almost imperceptible gradation, and thus to prevent the harshness which arises from colours or tints far removed from each other in the scale of harmonic gradation being brought into close contact. This may be explained by the following diagram:—



No. 1.



No. 2.



No. 3.

The first figure is supposed to represent a portion of the design for a carpet, which is to be shaded gradually from the darkest tint downwards, to the lightest tint of the same colour; the gradations of tints being twelve in number, the variations are slight, and the effect is very soft. The second figure is to be graduated in a similar manner, but the number of shades of colour, instead of being twelve as in the first, are only six; the gradations of tint, which must be selected at regular intervals, will be more abrupt, and the effect less soft. Now, suppose the same space in the third figure is to be shaded in the same manner, but four shades only are to be employed, in this case the transitions will be still more abrupt, and the general effect will be harder, and less pleasing than the second figure. It will thus be readily understood that the more numerous the gradations of colour, the softer and richer will be the effect.

Not satisfied with possessing a greater number of gradations of colour, the French weaver compounds others: for example, let us suppose that he has ten shades of colour given to him, that the wool with which he works is composed of three threads, he can, by mixing two threads of No. 10, with one of No. 9, form an intermediate tint which may be more available to the design than either of the others; in the same manner, by mixing threads of different colours, he can form those broken tints, which add so materially to the mellowness and harmony of the design. Thus, two threads of green and one of red (properly contrasted), will form a useful broken or shadow tint; and two threads of red and one of green, will form another shade, different in its effect from the first; both of

* It is said that seven colours only can be introduced into a Brussels carpet.

THE HARMONY OF COLOURS.

those may be found useful in carpets containing much red and green.

From the appearance of the coloured design on paper for a carpet, it is scarcely possible to judge of its effects when worked; for, as the weaver has no means of imitating the softly blended tints of the original design except by stitches, which are in fact a succession of small squares, the transitions of colour (which are also dependent on the number of shades to be employed) are necessarily more sudden and abrupt; and he cannot, as M. Cherruel observes, be said to copy the design, but to *transmute* it; the peculiar manner of weaving the carpet, and the want of the requisite number of shades and broken colours, preventing his imitating it with greater exactness. Much, however, will depend on the skill of the weaver, and his knowledge of the principles of the harmony and contrast of colours; the artist who makes the design then, is not chargeable with those abrupt transitions of colour, which so frequently shock the educated eye in the finished carpet.

These remarks do not of course apply to Mr. Whytock's patent tapestry carpets, in which the wool being dyed of the exact tint required by the coloured design, all badness occasioned by the want of intermediate tints, is avoided, and a rich effect is easily produced. In this case the beauty of the carpets depends upon the harmony and contrast of colours in the design, and upon the accuracy with which the tints are imitated by the dyer.*

The designs of the greater part of the carpets exhibited consist of a centre variously ornamented, surrounded with a border of a rich design. (Carpets of this description are not adapted for apartments in which the furniture, according to the modern fashion, is disposed all over the room. The carpet is intended to be placed in the centre of the room, and no furniture but a table should be placed on it; the border should be visible in its whole extent, except at the fire-place, where it is concealed by the rug. The space beyond the ornamental border may be filled up with a carpet of quiet colours, inlaid boards, or encaustic tiles, according to the purpose for which the room is designed, and on this the chairs and other furniture should be placed. The effect of the rich border would be entirely destroyed by placing furniture on it.)

These carpets suggest another observation. They are most of them of gorgeous colours. In order therefore to preserve a due harmony and balance of colours, the walls of an apartment containing one of these carpets should be covered with some quiet tints which harmonise with the colours of the carpet; and the chairs and curtains should be of one uniform colour.

The selection and contrast of the colours of carpets are governed by the general laws relative to the contrast and harmony of colours.

Although the English carpets, as a class, are justly charged with an inharmonious arrangement of colours, there are, nevertheless, some to which this defect cannot be imputed; and which, as regards the disposition, and assortment of the colours, are fully equal to those of any other nation. The limits assigned to this essay do not permit a detailed description of the best carpets; but I have great pleasure in mentioning among the most successful exhibitors of carpets the names of Messrs. Wright, Crump, & Coates; Messrs. Tuberville & Smith; Mr. Lapworth; Messrs. Watson &

* In the Brussels carpets, wool of different shades and colours is employed, thus required to produce the pattern being thrown upon the surface, while the others are passed at the back; by this means more wool is used than is necessary, and, as the shades of colour are limited in number, the transitions of colour are more abrupt. In the patent tapestry carpets, the wool is in one continuous length, which, by exact calculation of the quantity of such tints that is required to comprise a pattern, is dyed of various colours before it is woven. The weaving of a carpet of this kind is, therefore, a simple process: the workman has nothing to do but to weave the tinted wool as it is delivered to him, and as in this kind of carpets, wool is passed at the back, the material is economical. When the carpet is finished, the pattern is in every respect, except in the square form of the settler, equal to the pattern design (provided that the calculations have been made correctly), and the gradations of colour may be as numerous and as complete as if the pattern had been original. The greatest nicety and accuracy is however required in making the calculations of the different lengths of colour with which the wool is stained, any error in this respect would of course distort the pattern.

Bell; Mr. Humphries; Mr. Harris; Mr. Templeton; Messrs. Newcomb & Sons; Messrs. Jackson & Graham; Messrs. Henderson & Widdell; and Mr. Pugin. Mr. Woodward also, exhibits a stair-carpet, which presents a very pleasing arrangement of quiet colours.

The French exhibit some carpets and hearth-rugs of great beauty, which are deserving of study for the harmony and contrast of the colours, and the softness with which the different tints and shades are blended. In the large carpet with the elegant arabesque design the contrast of the deep rose colour with its complementary pale warm green, is very beautiful and quite novel; but the general effect of the carpet is too brilliant, the eye requires repose, and the introduction of a little more of the quiet semi-neutrals would have been a great improvement. The coloured flowers on the large industrial carpets are exquisitely wrought, the gradations of colour here all the harmony of the natural flowers; but the general effect would have been improved had the ground been of less positive colours.

The arrangement on the wall of different breadths of French carpets is dictated by the same good taste for which the French are generally distinguished. A single breadth of carpet, of two shades of dark crimson, dark green, or dark blue, is contrasted with two breadths of carpet of floral design, of the brightest colours on white grounds, the two breadths of the latter being necessary to show the beauty of the design. The arrangement produces the effect of light and shade.

The German carpets are not, on the whole, equal in the harmonious arrangement of the colours to the French, there are, nevertheless, some which are excellent. A carpet of Belgian manufacture, in which a claret-coloured ground is enlivened by a design in amber colour, relieved with a little white, lavender, and coloured flowers, is very handsome. In the Zeltzevin department is a carpet by M. Dinglinger, which has, also, a good effect. The good effect of a carpet, covered with a small design in red, dark blue, yellow, green, and white, is injured by the somewhat glaring colours of the border, which do not harmonise with the centre. Upon the whole, some of the richest effects of colours on carpets are those on a claret-coloured or russet ground, enriched by a design in oak colour, and enlivened by coloured flowers. Claret, or russet, is, in general, a better colour for the extreme darks of a carpet than black, for it harmonises with colours partaking of red, and it contrasts well with the cool colours. Black, besides, being too cold, frequently presents too great an opposition to the other colours.

Although the Turkey and Persian carpets do not emulate ours in the brilliancy of the colours, or the elegance of the design, they are generally far superior to them in the harmonious combination of the colours. The designs, if such they can be called, are generally small, and the beauty of the carpet consists chiefly in the arrangements of small portions of colour, which are disposed rather with a view to their general harmony than to the formation of any design. Occasionally, however, an arabesque or geometrical pattern may be traced. The prevailing colours are reds and greens, strengthened occasionally with deep indigo blue, and enlivened with a little orange or yellow. The scale of colour comprises yellow of two shades, orange, red, crimson, and russet, two shades of green, two of blue, black and white; a sufficient extensive scale to produce good and rich effects of colour, where a pictorial design and chiaroscuro effects are not attempted. The colours in the Indian carpets are, perhaps, brighter than in those of Turkey, and are contrasted with great skill. One carpet, in which the colours are very beautiful, is of silk. Some of the Indian prayer carpets, with deep gold borders and fringes, are extremely rich; in these, repose is obtained by making the rug of plain crimson silk, persons with less taste would have covered it with an ornament.

Among the French carpets is an imitation Turkey carpet, which presents a very harmonious combination of colours. Mr. Lapworth has, also, a Turkey carpet, in which the colours are well arranged.

With regard to those libels on pictures, executed in Berlin wool, which are now unfortunately so common, and some of which have found their way into the Great Exhibition, it is

AS EXEMPLIFIED IN THE EXHIBITION.

lamentable to think that ladies should, with a patience and industry worthy of a better object, spend so much time upon them.

It is impossible to see these caricatures of human nature without applying to them the words of Shakespeare,—“One would think that some of nature's journey-men had made them and not made them well, they imitate humanity so abominably.” If half the time that young ladies devote to these useless labours were devoted to the acquirement of a knowledge of the principles which govern the harmony of colours,—a kind of knowledge which is very easily attained,—the good effects would soon be apparent, not only in the more appropriate choice of subjects on which to display their skill in needlework, but in better and more tasteful work applicable to domestic purposes.

The subjects adapted to this kind of industry are flowers, birds, arabesques, and other objects which admit of the introduction of lively colours. Subjects which involve the combination of tints, requiring the finest gradations of colour and the most faithful observation of the chiroscuro, such as occur in figure-subjects, should be always avoided.

The observations of M. Chervel, in his excellent work on colour, with regard to the representation of the human figure in tapestry, are deserving the attention of those ladies who exercise their ingenuity and patience on Berlin wool work. M. Chervel observes that, from the nature of the materials and the method of working, a coloured image is formed by two threads cutting each other at right angles, and consequently producing an uneven surface; whence it follows, that tapestry will never produce the effect of a picture (the surface of which is quite even), unless it is viewed by the spectator from such a distance that the lines are no longer visible; he also observes that, from the necessity that the interstices between the stitches should disappear from the sight before a piece of tapestry can produce the effect of a picture, it is essential that the objects represented should be of large size, and of a variety of colours, which present harmonious contrast rather than those of analogy. “Every example,” he continues, “which does not fulfil these conditions, is bad, and as it is very difficult to find shades of colour sufficiently numerous and properly contrasted to match the various tints in pictures which have not been painted for the express purpose of being re-produced in tapestry; it would be for the advantage of the art if pictures were executed purposely to serve as models for this kind of work; these models should be painted in a broad manner, without those delicate gradations of tint which distinguish the higher class of art.” If such then be the opinion of one so well acquainted with the subject as M. Chervel, with regard to the representation of figures in tapestry, with how much more force do they apply to Berlin wool work, in which the stitches are so much larger. Young ladies should consider this before they attempt to represent with their needle Sir Edwin Landseer's “Bulton Abbey,” or the young Prince of Wales as a sailor.

The oil-colours appear, with some exceptions, to be open to the same objections as the carpets, namely, the prevalence of harsh oppositions of positive colours, and the want of middle tints. Some, however, exhibited by Mr. Nairn of Kirkcaldy, are very harmonious. The colours in these are generally of quiet and broken hues. In one of his specimens more lively colours are combined with a graceful design and equally harmonious effect. An oil-cloth, exhibited by Messrs. Smith and Baker, has a very agreeable effect: in this, the colours are bright pure green; dark ultramarine blue, inclining to purple, and made to appear still more purple by its contrast with green, which in its turn receives a warm tint by the contrast; oak-colour, which has been represented subdued orange, the third of the secondary colours; dark brown, and white. In another specimen, coloured black, white, and red, the black pattern on the red acquires, by contrast with the latter, a dark green tint. A wall coloured design of an oak-colour, with coloured flowers on a white ground, is exhibited by Mr. Wells.

The arrangement of colours in encaustic tiles and other compositions for pavements and mosaic work, is in general better than in carpets. These, however, are not attended with the same difficulties, the designs commonly consisting of geometrical patterns in few colours.

As the last-mentioned arts must be considered rather as reveals than as new inventions, the manufacturers have shown much good taste in adopting not only the mechanical part of the arts, but the style of design, from examples of acknowledged excellence. The advantage of studying the principles of design and colour observed in the ancient and medieval works of this class is apparent in these modern imitations, which are comparatively free from those violent oppositions of colour so apparent in some of the other branches of Art-manufacture. The success of these designs therefore affords a presumption of the perfection which may be attained in decorative Art, when the true principles become familiarly known and practised.

In the encaustic, and pavement tiles, and mosaic flooring, the colours are generally of the subdued or broken kind; deep and dull blue, quiet greens, buff or yellow ochre colour, dull red (the colour of terra cotta), chocolate brown, black, and slate, with white of a warm cream colour, are the usual colours. Bright and positive colours are by no means necessary to produce harmonious and agreeable effects—it is the just balance and contrast of colours which causes harmony. Among the best examples of mosaic pavement may be mentioned, copies of portions of the pavements in San Bartolomeo, and Sta Maria Maggiore, at Rome, and in the cathedral at Naples; also of some Etruscan and Pompeian designs.

The arrangements of colour in the specimens of metallic lacquer are not so good: the harmony of the quiet and more subdued colours is broken by the abrupt transition to bright vermilion, or yellow, which overpowers the rest. Although this pre-eminence of one colour over the others, may produce an excellent effect in painting by calling the attention of the spectator to the principal object, it is not so with respect to the kind of decorative Art we are now considering, in which such an arrangement would be misplaced. In a design of this kind, it is intended that the eye should embrace the whole of the subject at once, and a general balance and harmony of colours should pervade the whole design; the prevailing, therefore, of one colour over the others, either by its brightness or its undue proportions, destroys the unity of effect, and is clearly a blemish.

It is much to be regretted that the papier-mâché and japanned goods should prevent so few examples of good taste in colouring. In these, the glitter of metallic colours in too frequently mistaken for richness, and violent contrasts for harmony. The artist seems to run riot in the riches of his palette, and to endeavour to dazzle if he fails to please. In speaking of the want of harmony in the colouring of carpets, due allowance has been made for mechanical defects, which render the adoption of certain designs a matter of some difficulty, but none of these defects can be imputed to the painting of papier-mâché works. With an almost unlimited scale of colour, and obedient materials, which are capable of producing the richest and most harmonious effects of colour, these works by the bad taste too often perceptible in their decorations, contrast disadvantageously with the Indian articles of the same nature, in imitation of which they were originally manufactured. The Indian principle of ornamentation deserves as much attention as the material, and the examples of the tiles and mosaic pavements may be adduced as instances of the advantage attending the study of the principle of decoration adopted in national manufactures, as well as the materials employed.

The same abruptness and crudity of colouring which are perceptible in the English carpets, are also too often visible in the printed table covers, the dyed sheep-skins, the designs for silk handkerchiefs, and the furniture chintzes and damasks. In many of the latter the designs are very beautiful, but the colours are frequently ill-assorted, as well as harsh from the extreme strength, and in some cases blackness, of the shadow colour, especially when contrasted, as frequently happens, with regard to furniture-prints, with a white ground. A design of holyhocks on a white ground among the furniture chintzes of Messrs. M'Alpin, Stread, & Co., is, however, exempt from these defects, and is very beautiful. Messrs. Swainson and Denys have some excellent and well-executed designs upon white, pale green, and claret-coloured grounds. The general

arrangement of the space allotted to these manufacturers is also very tasteful.

It is much to be regretted that the very elaborately decorated bed exhibited by Messrs. Rogers & Dean should not display a more chaste and harmonious assortment of colours. The designer appears to have mistaken gaudiness for splendour. The colours of the bed are scarlet, bright green, white, and straw-colour; the colour of the canopy is green, trimmed with gimp of various colours, among which are red and yellow, while the curtains are of deep blue and orange-coloured flowers with green leaves on a white ground.

The gorgeous medieval court of Mr. Pugin demands a few words. While acknowledging the beauty and richness of many of the objects with which it is decorated, it must be confessed that in general harmony of effect the court is inferior to the beautifully arranged French court containing the *Sèvres* china and Gobelins tapestry. In the former there is too much ornament; too much positive colour; too much unsubdued splendour; scarlet and gold meet the eye in every direction, and overpower it with their brilliancy.

The painted glass is too important a subject to be dismissed in a few words. It should furnish the text of a separate article. It may, however, be observed, while admitting the great beauty and excellence of the magnificent window by Bertini, of Milan, in the nave, that in this Art the English need not fear to enter into competition with foreigners. Even in this department, however, some contrasts of colour, which might have been avoided by a better knowledge of the principles by which the harmony of colours is regulated, may be detected by a practised eye.

The observations in the preceding pages will, it is hoped, have shown the utility and advantage which may be derived from the study of the harmony of colours, to those even who are not actually engaged in the production of coloured goods.

The man of taste, and even the casual observer, can judge whether the general arrangement of colours is pleasing or displeasing to the eye; but the artist and the scientific man take a more comprehensive view; they would ascertain how an effect had been produced, in order to be able to repeat or avoid it at pleasure. By means, therefore, of comparing and analysing, it is found that the contrast of colours, which, to the superficial observer, appears to be merely a matter of taste, is, in fact, governed by fixed laws; and that "good taste," and "a good eye," are but common terms for that almost instinctive perception which some persons possess, of what is in harmony with these laws or contrary to them, and which is only acquired by others after long and assiduous study.

That the British painters have "an eye for colour" is uniformly admitted; how is it then, that the same cannot be said of the British manufacturers? The answer is because the eye is educated in the one case, and uneducated in the other. The first attempts of our painters in colours were not attended with the successful results of their ripper years. Neither do the early pictures of the great Italian colourists exhibit the harmony of the works executed in the prime of their artistical career. The attainment of a good and harmonious style of colour in painting is the result of much observation and study, not only of nature, but of the works of other artists; the same steps must be followed in Art-manufactures, or the same results will not be attained. When the principles by which the harmony of colour is regulated are clearly understood, they are easily carried into practice. Although, as has been justly remarked, the British manufacturers are inferior in colouring, and frequently in design, to the continental exhibitors in decorative art—for under this term we must include those elaborately ornamented carpets, draps, and furniture fabrics, exhibited in the Crystal Palace—there is evidently an improvement upon former designs; and when the subject of colour has received the attention which it deserves, we may confidently reckon on a still greater improvement. The elegant designs, and the harmonious colouring of the French and Italians in their Art-manufactures, has been the subject of general commendation; but neither of these nations acquired their good taste in design and colour in a day, or without study. In former times, it is well known, the best

Italian artists did not think it beneath them to make designs for Art-manufacturers; hence the good taste of the Italians in the lower branches of Art. The French have had schools of design for more than a century, and in consequence of the attention paid in these schools to the harmony of colours, their Art-manufactures exhibit a better and more harmonious style of colouring than many of their works of the higher classes of Art—a convincing proof of the success attending the study of the subject, and the advantages to be derived from the contemplation of good examples. When the British manufacturers study colour with the same earnestness as the British artists have done, the happy results will be visible in their productions; and not until then can they successfully compete in the decorative arts with their continental neighbors.

In conclusion, I must observe, that if, in the preceding pages, foreigners have been commended at the expense of the British for their skill in the arrangement of colours, it has been done in the full confidence that it was merely necessary to point out the defect in order to induce our enterprising manufacturers to overcome it. The superiority of our countrymen in so many branches of industry—in those especially which are most essential to the interests and comforts of mankind—is so manifest, that we can afford to acknowledge our inferiority as regards the arrangement of colour. But the British are not content with mediocrity, and I feel assured that if another exhibition of the industry of all nations should ever take place, the same defects will never again be imputed to us.

I have mentioned that the taste and skill of the Italians and French in the arts of design were not acquired in a day, but that they have been the growth of years; I am satisfied that time only is wanting to render the British fully equal to them in these arts. It has been urged by some that the superiority of the latter cannot be in the production of what is useful, and that they cannot attain eminence in the ornamental arts; but the word "impossible," as Lord Brougham says, "is the mother-tongue of little souls;" and the word "cannot" has had no place in the national vocabulary since the day when Robert Bruce watched the repeated, and at length successful efforts, of the spider to reach the wall of the hotel in which he lay concealed.





BY EDWARD FORBES, F.R.S.,
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BEAUTY and utility are equally attributes of the vegetable kingdom. The natural ornaments and clothing of the earth are the herbs and trees that conceal the nakedness of her soil, and garb her with a robe of verdure. Her mountain peaks, that tower amid the clouds, and her rocky ledges, that stretch into the sea, the continents repose on their planet's surface, like mighty statues of the ancient time, whose lofty heads of snowy whiteness rose skywards uncovered, and whose ivory feet rested naked amid the ebb and flow of the tide of worshippers, pouring through the temple gates; whilst their massive bodies were invested with many-hued draperies, rich in embroidery, and thickly garnished with flowers. But the earth's clothing is no holiday vestment.

Man wraps himself in its shreds, and derives nourishment from its countless products. Out of stem and leaf he constructs the implements of peaceful toil, the furniture of luxurious ease, the weapons of deadly warfare; and builds himself hut and house, palace and ship. From bark and fibre he manufactures fabrics, surpassing in beauty the tissues out of which they have been woven, and, staining them in symmetrical or fanciful devices with hues supplied by the saps of plants, emulates the brilliancy and variety of nature's own painting. Out of their vital juices he extracts healing medicines and virulent poisons, or, changing the flowing sap to purposes strangely foreign to its original destination, converts its concentrated and flexible essence into graceful vases and endless tubes, vessels and testaments; or bolts and valves of wonderful machinery that in its actions and operations darts to rival the untiring energy and productive power of Nature herself.

The investigation of the various vegetable products that have been used for purposes of manufacture, clothing, ornament, food, and physic, is a part of the science of the Botanist.

By him are determined the structure and affinities of the plants from whence they have been derived, and through his enquiries we are made acquainted with the relative value of substances already known, and the probable sources of new and sometimes better materials. He looks with hope to the influence which the Great Exhibition will assuredly exercise upon the economical bearings of his science. Though it be enabled to see and examine the innumerable bodies of vegetable origin that find their way into commerce almost without notice or examination, except by those who employ them, without caring to enquire whence they come, and what they really are. Manufacturers have much yet to gain from science, and this great opportunity of bringing the student into contact with the practical man will doubtless benefit both.

For the naturalist interested in the manifold applications of his favourite studies, now for the first time collected within his view, will mingle philanthropic aims with the somewhat selfish pleasures of purely scientific enquiry. And the manufacturer, quick to appropriate new fields for the exercise of his skill and profitable employment of his capital, will learn to value the accurate and minute information concerning the sources and capabilities of unused or imperfectly applied products, which so many of our philosophers possess without caring to communicate, unless where it is sure to be understood and appreciated.

The works of botanists contain minute descriptions of more than eighty thousand distinct kinds of plants. Each member of this vast assemblage has a name assigned to it, and a "character" by which it may be distinguished from every other known vegetable. The name is composed of two latin words, one significant of its genus, or relationship with plants very near it in structure and aspect, the other expressive of some peculiar feature of its own, or merely serving to designate it distinctly among the several species or kinds composing the genus to which it belongs. Out of this simple proceeding a scientific language results, comprehended by botanists all over the world. Thus, when we write of the *Populus tremula*, all botanists in all nations understand by the generic word *Populus*, a plant presenting an assemblage of characters of organisation, such as are common to all poplars and are combined in poplars only; and by the specific epithet *tremula* they understand that particular kind of poplar to which in England we familiarly give the name of *aspen*, and that kind only. The word *tremula* stands as a sign for a certain combination of characters distinctive of the aspen, among plants of the poplar group or genus. By this simple scheme of nomenclature, devised by the illustrious Linnæus, we are enabled in few words and within limited compass to refer every known plant to its recognised place in the great army of the vegetable kingdom, and the extent to which scientific labelling has been attempted among the collections of vegetable substances in several departments of the Exhibition, is a pleasing indication of the recognition of the definite language of science by not a few of the commercial exhibitors. In the end it will be found that this precise, though technical nomenclature, is really easily learnt and much more convenient for business use, than the vague, unmeaning, and often false terms in popular use.

Of all the natural history sciences, botany is that in which systematic research has been prosecuted with most industry and completeness. The facility with which large collections of preserved plants can be accumulated and kept in order by private individuals, and the comparative small expense at which assemblages of living vegetables can be brought together, have been the chief causes for this high state of botanical knowledge. It is out of the power of the student, unless vastly richer than students generally are, to accumulate within his reach a collection of great or sufficient extent of creatures even of any one division of the animal kingdom; a nation only can approach to completeness in the formation of a museum illustrative of animal life, and as to gathering together an ark-full of living animals, such as is essential for complete study, the greatest of zoological gardens can make but little way; and all the power, resources, and science of a Zoological Society can only succeed (inestimable as that success) in assembling the living representatives of a portion of one of the

THE VEGETABLE WORLD

four great divisions of the animal kingdom, an effort impossible of imitation by an individual philosopher, unless he combine the love of science, the energy and wealth of an Earl of Derby. Of living plants on the other hand, not a few private persons have valuable collections, and the vast assemblage within the precincts of the Royal Gardens, at Kew, presents an opportunity for botanical study, such as can be met with nowhere else; whilst among the many and extensive herbaria of dried specimens belonging to lovers of botany and scientific societies in Britain, that of the illustrious botanist who presides, to the great benefit of the public, over the Gardens at Kew, is probably unequalled in the world, although it be a private collection.

Yet with all these facilities for the acquiring of botanical information, and with all the advantages of an extensive and constantly increasing literature in this department of science, it is astonishing to find how large is the number of vegetable productions used in the arts or manufactures of which our knowledge is very imperfect; the sources of many of them indeed are, scientifically, unknown. If we visit the workshop of the cabinet-maker, we find him using ornamental woods, known to him by some rhapsodical name or uncouth English appellation, but of which the ablest of botanists cannot tell the name of the trees that furnished them, or state more than the great class, or the possible natural family to which such trees belong. If we explore the laboratory of the chemist, whose business it is to compound the prescriptions of the physician, or the stores of the druggist who supplies our manufacturers, we are shown substances whose precise sources have escaped all the searching enquiries of a Ray, a Christen, or a Ponce. Even the yards of our ship-builders contain not unfrequently vast beams and planks of unknown or doubtful trees. All the light that pours so gloriously through the transparent walls of the Crystal Palace cannot, in the present state of our knowledge, enable us to determine with certainty the origin of many of the beautiful and curious vegetable productions so admirably arranged within them. But out of this ignorance knowledge will spring, for now, in this great gathering and re-gathering of things used and things useful, we shall have the means of knowing from whence many a substance really comes, that hitherto in its mystifying course through the labyrinth of commerce, has deflected all attempts to ascertain its birthplace.

In illustration of these remarks we may refer to the collections of vegetable substances employed in manufactures displayed in various parts of the Exhibition, and more especially to those sections of them devoted to ornamental woods. The admirable and most interesting series of specimens illustrative of imports of raw produce into the port of Liverpool, in the getting up of which the greatest pains have been taken by the gentleman who superintended it and carried out the idea of forming such a collection, contains not a few imported woods used for furniture-making in this country, derived from untrammelled trees. This is also the case with almost all, if not all, the collections exhibited professing to display foreign ornamental woods in British use, such as the beautiful and most curious series collected at great cost by Mr. Wilson Wood, a naturalist of well-known acquirements; the tastefully mounted set of specimens contributed by the Messrs. Harrison, of Hull; the foreign hardwoods of Messrs. Fauntleroy; the collections from India, and the Indian Isles; and those from some of the colonial possessions in America and the Southern Hemisphere.

Even in instances where the collections have been made expressly for this great display of the useful products of nature, and superintended on the spot by men possessing all the requisite scientific skill and acquirements, the difficulty of obtaining information respecting their sources sufficiently minute for scientific information has been insuperable within the limits of time permitted. The display of vegetable products from British Guiana may serve as an example. It is a very curious and instructive collection, prepared with great knowledge and care, got together in a colony, having the good fortune to number in its committee men of high scientific reputation; among others, Dr. Charles, well-known for his botanical researches, and not forgetful in his adopted country

of his earlier pursuits. Yet not a few of the vegetable substances used for building or clothing in the colony, forming part of this collection, and enumerated in the admirably prepared document that accompanies it, are known only by their Indian names. Once, however, (as is now, indeed, sure to be done), the attention of botanists is directed to these deficiencies, we may hope before long for systematized catalogues of the useful and ornamental timber of each country, as well drawn up as that accompanying the attractive series of English-grown woods exhibited by Mr. Cross.

There are few tracts of land, however limited their extent and barren their surface, that have not yielded to man some vegetable productions adapted for food, clothing, ornament. Even on the seemingly naked and isolated rock, he gathers the crust-like lichen for the sake of its vivid dye; and on the sandy sea-side waste collects saliferous herbs from which to extract alkalies. Each belt of climate, each natural province, has its characteristic vegetation; and there is scarcely a region marked by the presence of a distinctive flora, which does not yield some peculiar plants, furnishing, or capable of furnishing, substances adapted for economical or decorative uses. The forests of temperate climates abound in trees, inestimable for their qualities as building timber, or their beauty as ornamental woods. The luxuriant vegetation of the tropics, where often a small space of ground is thickly studied with a vast variety of arborescent plants, rejoices in woods of exquisite colour, and is prolific in trees and shrubs whose juices, renowned as it were, by a vertical sun, are rich with valuable oils, gums, and dyes. In both tropical and temperate zones grow, spontaneously or cultivated, numerous plants of very different structure, whose fibres supply materials from which to weave cloth or twist cords. Some of them have been under cultivation ever since the remotest antiquity, some have had their properties made known and developed within the memory of the present generation, and, possibly, some will date their history as articles of economic value from the passing and memorable year.

Around the poles, indeed, vegetable life is at its minimum. Among the realms of everlasting ice and snow there are no trees, nor arborescent herbs. The people of the frigid zone can contribute no raw vegetable produce or articles manufactured from it to the great fair of the world, unless they adopt for the moment occupations unusual with them. In this way the Esquimaux have indicated their existence among the assembled races in Hyde Park, who bote upon what they can do, or have done, by a few rude carvings in imported wood. But, in the boreal regions that belt the Arctic circle, vast forests of pines spread their dark, needle-shaped foliage, outnumbering over the land. The axe of the woodman has there need of frequent sharpening. The trunks of giant pines are prostrated by thousands, and yet the forest seems as dense as before. The flaming torrent bears them down towards the sea, where once more they are destined to raise on high their taper forms, divested of spreading boughs and dark green leaves, yet clothed with a new and snowy foliage of silks, woven from the slender stems of delicate herbs. The herb, through man's transforming power, becomes master of the tree, and the tall monarch of the woods, so lately rooted firm in the deep earth, must obey the guidance of the wide-spread canvas woven from the tender blue-eyed flower, that seemed too frail to play any greater part beyond decorating the meadow where it grew, and feeding the wild birds with its oily seeds.

The people of all countries and climates, from the first appearance of the human race, have applied to use their vegetable productions. The spreading tree and its leaves seem symbolical of shelter and clothing, whilst its fruit is among the most natural of foods of food. Everywhere do we find erections of timber and fabrics woven of vegetable fibre. However far we carry back researches into national antiquities, we can discover no traces of an epoch when the textile and colouring uses of plants were unknown and unapplied. It is an instinct of man's nature to subdue the vegetable kingdom to his service. A minute acquaintance with the qualities and properties of plants is deemed even a more necessary accomplishment by the savage than by the civilized man. With the latter, however, in the division and distribution of the various branches

AS CONTRIBUTING TO THE EXHIBITION.

of knowledge, it becomes confined to a few, who make it their business or their pleasure, whilst among the former the well-being of every individual too intimately depends on its possession to admit of his dispensing with it.

The vegetable world is eminently suggestive even to savage man, of tasteful ornament. The graceful curves and elegant shapes of foliage, the droop of a peduncle, the symmetry and harmonious colouring of a flower, all sow the seeds of taste wherever there is intelligence to warm them into germination. The stately trunks of towering palms furnish the simple yet majestic pillars of his temple, or support the canopy of fan-like leaves that he erects to overshadow the resting-place of his ancestors. The interlacing boughs of congregated forest trees teach him to raft the roof of his dwelling, and arch his store-house. The twining vine, the creeping ivy, the trumpet-shaped arum bid him imitate in rude, but effective sculptures, their graceful outlines. He decorates his canoe with imperfect images of the wild flowers that star the thickets around his hut; he stains his body in tangle-like patterns with the bright coloured juices of the herbs that cluster spontaneously about his doorway; of their crimson berries and speckled seeds, strung on the fibres of a lily or a grass, he makes necklaces and armlets for festal decorations; the hollow of a gourd, filled with pebbles from a brook, yields a rude music in cadence with his rude dancing; their brilliant hues of white, blue, purple, and gold, attract him to gather freshly blown and odorous flowers, which delight him with their brightness and sweetness, and serve as temporary adornments of his person.

Civilised man, whose observing and reasoning powers have ripened through the genial influence of centuries of education, sees in the humble effort and simple taste of his savage brother, the indications of paths leading to art, skill, and discovery. The rude yet not ungraceful house-post, hewn out of the forest-trunk, suggests the elegant column. The foliage clustering under the listel that caps its truncated summit, becomes moulded into the sculptured capital. The avenues of the forest are petrified into pillars and aisles. The greenward and its starry flowers, are pictures on the woven carpet. The herbs themselves yield up their filmy skeletons, to become the threads of flowing tunics and damsked cloths. The fleeting blossoms of delicate flowers are gathered, not merely for their own immediate beauty, but to serve as patterns for lasting and skilful imitations, which need but scent and honey, to deceive the wisest of bees, even though perchance the wax itself had manufactured has shared in producing the beautiful deceit.

Not without interest do we mark the display of workmanship and untrained skill amid this vast assemblage of workmanship by the nations of civilised regions. Not a few half-savage tribes have sent, either of their own will, or through the agency of enlightened friends, articles of no small ingenuity and skill, a great part of which are fabrics and instruments manufactured from the stems and leaves of plants. It is curious to notice how the uncivilised man of the tropics, the region of luxurious vegetation, derives his clothing and weapons mainly from the vegetable kingdom, whereas when we approach the poles the barbarian covers his body in the skins of wild beasts, and arms himself with mineral weapons. The native Africans of Aethiopia, and the gold coast, send their ropes woven of grass and cotton. The intrepid survivors of the unfortunate Niger expedition, unwilling that their noble friends, of whom, among many sorrowful, they yet retain some pleasant recollections, should be unrepresented, have sent in their name curious and well-woven dresses of the silk-cotton furnished by the pigistic bombax, and beads constructed from palm-fruits, the ornaments of jetty belles. The Arab, more ambitious of European fame, contributes directly and with no small art and taste of workmanship, though most of his manufactures are derived from animal materials. Our deadly enemy at the southern extremity of Africa has no other plant-representative saving those fitting emblems of war, the bow and arrow. The tattered negro, naturalised in tropical America, sends fantastically ornamented calabashes and ingenious baskets. The aboriginal Indian of Guiana, and the Carib of the West Indian Islands, remnant of a once powerful race, display mats made of the cabbage-palm, and samples

of their primitive wardrobe. The North American Indian has his birch bark canoe, a simple and rapid, yet efficient construction. The wilder tribes of Asia exhibit more abundant evidences of their ingenuity in turning the flora of their beautiful countries to account. These are woods curious in themselves, and curiously carved; ingenious cigar-cases, and hats, made of the leaves of serve-palms, evidently more comfortable, and unquestionably more elegant, than the barbarous head-gear of the west; fans, and mats from that mightiest of grasses, the bamboo; floor-cloths of rattan; fishing-nets of cotton; cloths of cotton, and others woven from the fibres of pine-apple and papaya. The New Zealander contributes his fabrics woven or plaited from the so-called flax of his country; a valuable contribution to the list of textile materials now in European use. Most interesting among all these simple manufactures are the mats of Pandanus, coronets of Tacca, and cloths of bread-fruit tree, sent from the Society Islands, by their Queen Pomare; these are the first efforts of infant civilisation contrasted with the grandest display of perfection of skill, and luxury of refinement ever exhibited by man.

II.

TO understand the part played by the vegetable kingdom in contributing substances fit for the use of man, or materials from which constructions and manufactures may be derived, it is necessary that we should regard it under two very different aspects—the one scientific, the other economical. The first shows to us the comparative amount of used and unused, and of useful and useless plants, included in each great natural assemblage; by it we are enabled to ascertain the probability of procuring new substances, for similar plants have often similar properties, and when this usefulness depends on their minute organisation, as is the case with vegetables furnishing textile materials, we may fairly expect to find many species adapted to our purpose in a tribe of which one or two members only may at present be employed. It is through the precise determinations arrived at by botanical science, that we can gain this knowledge, and though by blind trial and empirical experiment, valuable results are occasionally obtained, after much loss of valuable time, the great importance of sound scientific knowledge, when brought to bear on economic and commercial objects, and the far greater probability of our attaining the end of such researches, rapidly and surely, by scientific means, cannot be doubted by any person whose requirements are sufficient to warrant his pronouncing a judgment on this sometimes, though ignorantly, disputed question. This first aspect under which we may view plants, with reference to the purposes of the Great Exhibition, may be regarded as one exhibiting their capabilities; the other point of view in which they are presented, is one that regards their uses, as already arrived at, in most cases through the experience of ages. It is curious to observe, that vegetables used for various purposes by man, are either such as have been employed from time immemorial, or such as have been turned to account since natural history became a science; the fruits either of that first instinct that directs the savage to seek among the productions of nature assembled around him, for food and clothing; or, of that refined knowledge which, acting by a purely intellectual process, induces man when he has attained the high stage of civilisation marked by the logical prosecution of scientific research, to seek for new and better materials than those transmitted to him by the experience of his less thoughtful ancestors. It seems consistent with the high purposes contemplated by the illustrious projector of the World's Exhibition, to regard our subject first in its most scientific aspect.

All plants have been grouped under two great assemblages; the one developing distinct flowers, and the other apparently flowerless; the former propagating themselves by seeds, the latter by spores. The flowering plants are regarded as of higher organisation than the flowerless; the former present vascular structures, which are but imperfectly developed in flowerless plants, and only among a few, and those the higher

tribes of them. A great part of the substance of every plant is made up of little membranous vesicles, or cells; and the lower tribes of flowerless plants, such as mushrooms, lichens, and sea-weeds, are entirely made up of cells. Hence the lower plants are styled *cellular*, the higher ones *vascular*. A large proportion of the former division are minute, and often microscopic vegetables, and even in the present advanced condition of botanical science, numberless kinds of flowerless plants remain to be discovered. Their direct value to man is but small as compared with that of the flowering tribes; comparatively few of them are employed for purposes either of food or clothing. Out of these, however, some have found their way to the Crystal Palace, and are deserving of notice.

The most rudimentary forms of flowerless plants are exceedingly minute, and approach so nearly the nature of the lowest forms of animal life, that botanists and zoologists, even after the closest investigation, are in doubt respecting their true position. Yet, distinctive as they are, they are often invested with beautiful and symmetrical cases of siliceous matter secreted within their microscopic tissues; and being produced in myriads, their powers of multiplication compensating for their minuteness, they become accumulated, when they die, into masses of such quantity as in many places to form a stratum of considerable thickness. In that condition they have served occasionally for food, as in the instance of the famous Berg-neel of Sweden, but more frequently are employed as a polishing-powder, and so become of commercial value. As such we find them exhibited; and in the Canadian collection considerable masses of this substance are displayed, which none but the naturalist could recognise as derived from so singular a source. Sea-weeds are some steps higher in the scale of cellular plants. Their elegant forms and brilliant, though, in their dried state, faded colours adapt them for ornamental work. At our sea-side watering-places they are often combined as decorations for baskets and boxes, and as pictures in frames. They are thus contributed to the Exhibition from Hastings and other sea-ports. Made up as books into small herbaria, properly arranged and accurately named, they would be more elegant and instructive, and probably more remunerative, than in the form in which they are usually presented. Several varieties of alga, preserved mostly by drying, are forwarded as articles of food; among others, the so-called Irish moss, which is the *Cladonia crispata*, and the *Ulva* or eelk, both British plants. The Agar-Agar, a substance exhibited from the Indian Archipelago, where it is used for making jellies and stiffening silk, is very similar to the Irish moss; and the quantities which give value to both are those that are so highly prized by the Chinese in the edible birds'-nests, constructed of a sea-weed, probably a species of *Gelidium*, and exhibited in the Singapore collection. The ashes of fuel form kelp, which, with iodine, derived from various sea-weeds, is displayed in the collection of chemical products by both English and Scotch manufacturers.

Lichens are terrestrial algae, mostly preventing the appearance of variously-coloured leathery crusts investing trees and stones. A few are used for food, such as the Iceland moss, *Cetraria islandica*. More important are those which furnish dyes, especially the different kinds belonging to the several genera and species that supply the Orbil, Litmus, and Cudbear of commerce, yielding valuable red and blue pigments. As these plants are generally diffused all over the world, we find them exhibited by countries very far apart,—from the far North and from the Tropics. The islands off the western coast of Africa have furnished the most valuable and abundant supply; and Portugal, as their possessor, exhibits many varieties.

The two great classes of Endogens and Exogens, into which the flowering plants are divided, offer a vast number of valuable products. Of the families of endogenous plants, the Grasses hold a pre-eminent position among sources of food; for to them the invaluable assemblage of *Cerealia* belongs. Nor should the sugar-cane be forgotten. Among substances adapted for manufactures, not a few come from this great family. The bamboo, a giant among grasses, some of its species attaining the height of one hundred feet, is one of the

most useful among the tropical genera; from it we have timber and cordage, baskets and futes, fans and toy wares, and pickles. Deliciously fragrant scents are made by the Hiscas from *klus-klus*, the *Andropogon scortechianus*; and from Indian plants of the same genus aromatic oils are distilled, especially the grass-oil of Namur, yielded by the *Andropogon celastus aromaticus*, shown by Royle to be the plant so named by Dioscorides, and also the sweet cane of Scripture. The native perfumers of India have contributed these delicious oils to the Indian collection,—probably the most complete and interesting, as well as one of the most beautiful, compartments, in the Crystal Palace. From the stems of maize excellent brooms and brushes are constructed, and displayed in collections belonging to both Old and New World countries. The stalks of many kinds of grasses have been used from time immemorial for plating into head-coverings; and England fairly competes with Tuscany for elegance and skill in plating straw. The family of Sedges, so closely allied to grasses in their structure, play a less important economical part. The sedge of most ancient fame, the *Papyrus*, no longer makes a conspicuous figure among Egyptian materials. Species of the same genus have furnished, however, mats and cloth, sent from the Indian Archipelago; and cordage, twisted of kinds of *Cyperus*, are exhibited by several countries. Among our native plants of this order is the cotton-grass, *Eriophorum* of botanists, whose heads of snowy hair, gracefully drooping and waving to and fro with every breath of wind, are the ornaments of boggy meadows and peaty moors. Vain attempts have been made from time to time to convert this beautiful substance, apparently so well adapted for textile purposes, into a cloth. A Scottish exhibitor claims to have succeeded in this desirable experiment, which, should it prove profitable as well as practicable, may give value to much boggy land at present of little worth.

This family of Endogens, to which the *Arum* gives its name, contains many plants remarkable for beauty or interesting for their singularity, but few are useful. Among them is the great bulrush, *Typha latifolia*, the creeping stems of which are exhibited on account of a novel application of their substance, a flour of pleasant taste and convertible into a kind of bread being made out of their central portions, whilst the more fibrous tissues are proposed to be used as a substitute for lint. Allied to the *Arum*-tribe is the family of Screw-pines, natives of the tropics, and many of them turned to good account in the manufacture of matting, sackings, and cordage. One of them, the *Pandanus edentatus*, is immortalized in the lays of Eastern poets on account of the exquisite fragrance of its flowers, whose perfume has been distilled into an "attar," and exhibited by the perfumers of Benares. The true palms, constituting the natural order of *Palme*, are the aristocracy of this section of the vegetable kingdom, and as such, the most useful of all aristocracies. To enumerate their uses would be to name almost all the purposes to which a plant can be applied. In the gatherings from the East and West Indies especially, do they play a conspicuous part. In the collections of ornamental woods beautiful sections of palm trees may be seen, and several kinds, especially species of *Cocos* and *Borassus*, are employed for cabinet-making. Canes and rattans, the stems of species of *Calamus*, are displayed in multifarious forms of furniture, cordage, weapons, and walking-sticks, and even woven into articles of clothing. The leaves of the *Borassus flabelliformis* are constructed into fans and punkahs. The leaf-stalks of various species of *Phoenix*, including the date tree, are converted into baskets and boxes. Beautiful ornamental baskets and artificial flowers are exhibited from the Seychelle Islands, ingeniously cut out of the leaves of the double cocoa-nut, *Lodicea arachnoides*, one of the most remarkable palms in the world, and characteristic of these islands. The hairy investment of the *Gammul* palms (twisted in Singapore, into cables of peculiar excellence, and fibres from the Palmetto of the Bahamas are sent, converted into serviceable ropes. The dwarf-palms of the Mediterranean have been turned to account by M. Flechey, who exhibits paper and pasteboard made by a peculiar process from its leaves. M. Flechey transforms them into a vegetable hair. The vegetable ivory nut

AS CONTRIBUTING TO THE EXHIBITION.

is the product of a palm of the genus *Phytelephas*. The ivory-like substance so much used by turners, and converted into beautiful toys and carved ornaments, is the stony albumen of its seed stored up for the use of the embryo plant. The hard pericarp of the fruit of *Attalea funifera* is the Coquilla nut of commerce, so much used for similar purposes with the vegetable ivory, and especially for the handles of canes and umbrellas. The fibrous rind of the cocoa-nut furnishes the valuable substance known as Cōr, equal to hemp in strength, and extensively used for the manufacture of cordage, matting, rugs, and brooms. Palm oil is the product of an African species of *Elaeis*. Not a few valuable articles of food are contributed by this order. Among the most interesting of those exhibited are the mango cakes from the Moluccas, prepared from the pith of a kind of sugar palm, and used by the natives as sea-biscuits are by our sailors. Far removed in appearance, but having considerable structural affinity with the palms, are our native rushes. The pith of rushes has been employed for centuries as a primitive form of candle-wick. In the Exhibition it holds an honourable place, having been used as materials for the construction of some ingenious and elaborate models. The Lily tribe is most familiar as furnishing not a few of the beautiful ornaments of our gardens, and when we look upon the tulip and the marigold we are apt to regard them as belonging to a family of useless though splendid idlers. Not to speak of onions, squills, and aloe, there are in this family plants of the greatest economical importance. One of these, though but a recent introduction into our list of materials for manufactures, increases in value and estimation every day; we allude to the *Phoenix tenax*, or New Zealand flax, a singular misnomer. The so-called African hemp is derived from another liliaceous plant, and fabrics and even artificial flowers are exhibited from several tropical countries constructed out of the fibres of species of *Tacca*. Plants of the Fine-apple tribe furnish fibres of value for the weaving of cloth and manufacture of cord, and are represented in collections from both East and West. The Anacardiaceæ family in like manner contains fibre-furnishing plants, especially the *dyer*. It is curious to note the exhibition of cloaks and bags, and even paper manufactured at Algiers of the fibres of Agave, inasmuch as this singular vegetable, now so abundant in the Mediterranean region as to give a character to its vegetation, especially on the African side, is not a native there, but an American plant, introduced since the conquest of Mexico, and one, the uses of which were well known, and are still to the Mexicans, who, however, have displayed none of their manufactures from it. Incidentally we may remark the singular fact that there are more native *Aralis* of Barbary, exhibitors on their own account, than there are persons belonging to many of the South and Central American States. Fibres valuable for fine muslin textures are procured from members of the *Banana* tribe. The Arrow-root and Ginger tribes are fully represented by their peculiar product in the shape of food and condiments, contributed by tropical regions. The Orchidæ, very few kinds of which now exsist in our most beautiful tribe were known to Linnaeus, make but a poor figure amongst an assemblage of vegetables intended for use, and are represented by some vanilla pods and packets of saffron. In another form, however, they have contributed conspicuously to the beauty of the Exhibition, since they have served as models for some of the most exquisite imitations of flowers that have ever been displayed. Accurate models of *Orchidæ* are of more consequence than might seem at first glance. It is not merely the extreme beauty of the subjects that gives them value and attraction, though none can fail to be struck by the chaste colouring and graceful outlines of some, and the gorgeous hues and almost grotesque shapes of others, or by the strange imitations of the aspect of living insects presented by the blossoms of many kinds, some of them indigenous to Britain. It is their importance as subjects for scientific study, combined with the excessive difficulty there is in preserving them so as to exhibit their original features and characters, that lend a biologist to examine with curiosity modelled imitations of these plants. The manner in which they are represented in wax by Miniotini, and in canbric by Constantin, is worthy of the warmest praise; and very

curious are the specimens of the flowers themselves, rendered indestructible through the ingenious method by which Captain Ibbetson has coated them with copper.

The great majority of European trees belong to the lower or apetalous sections of *Eugonomas* plants. Among them, those of the Fine tribe stand apart, on account of singularities presented by their anatomical structure and mode of production of seed. Their wood has qualities peculiar to itself, and constitutes one of the most useful kinds of timber. Many of them yield valuable resinous secretions, such as turpentine, Canada balsam, Dammar, Sandarach, Tinas, and Burgundy pitch. This tendency to deposit-resin gives peculiar qualities to the wood, and sometimes, as in the case of the juniper and certain pines, flavours the fruit. Sections of coniferous wood are displayed in great variety in the collection of woods exhibited; and its application to the construction of furniture meet us at every turn. Some of the exotic species are of sufficient beauty to be turned to good account for ornamental woodwork, and are likely to prove of considerable value to our southern colonies. The Huon pine of Van Diemen's Land is excellently fitted for this purpose; and some highly ornamental tables, chiefly constructed from it, are exhibited. It is well adapted for inlaying in combination with other woods, especially that of the *Cameraria guineensis*, a Tasmanian tree, belonging to a natural family nearly allied to the pines. The cypress-topped pine, *Phyllocladus neophytoides*, a native of the same region, is a conagulate tree, growing to a great height, and producing timber of much beauty and durability. The trees of the Walnut family furnish valuable wood as well as fruit; and much of the most beautiful furniture, especially carved sideboards, in the Exhibition, is made from the wood of the common walnut. The black walnut of North America produces a wood of a rich purple-brown hue, but little employed by cabinetmakers in this country. Its capabilities are well shown in the chairs and tables made of it, exhibited by the Canadians, and highly creditable to their taste and skill. It can be stained in very large planks, and is sure to find its way into general use. The hickory is also a tree of the walnut tribe. The handles of axes and other tools, in the collections from the United States and our North American colonies, are mostly made of the wood of the white hickory, and are remarkable for their excellence. The great group of catkin-bearing trees supplies a vast number of valuable products, especially varieties of timber, pre-eminently the Oaks, Beeches, and Birches, the uses of which are almost countless, and the beauty inestimable. When looking at the furniture and section-specimens made from these valuable trees, we must bear in mind that there are many very distinct plants bearing these names, and that the American woods exhibited, although they bear the same denominations with European and Asiatic sorts, are derived from different species of the same genera. This is of consequence, since it does not follow that because two kinds of trees belong to the same genus, and closely resemble each other, they have therefore the same properties and economic value. Rich and varied in colour and grain as the numerous exotic woods now employed in cabinet-making are, few, if any of them, are so pleasant to the eye, when used in house-decoration, as our old and familiar acquaintance, the oak of England. Nor is its more ancient neighbour, the bog-oak of Ireland to be slighted,—that semi-fossil reteran, whose dark and tanned complexion reminds us of the countless centuries that have rolled away since his sturdy stem and stately arms reared a dense mass of warded foliage over mountain and plains that are now barrens and treeless. The Irish furniture made from this primal timber is admirably adapted for library equipments; and very elegant and tasteful are the little articles of jewellery carved out of the finer portions of it by Irish workmen. Indeed, for mourning ornaments, there are few more elegant and appropriate than the shemrock bracelets and harp-shaped brooch carved in the sister-island from its bog-woods; and with commendable taste the jewellers of Dublin have sought, in national emblems and antiquities, models that are as graceful as they are unbacked. In the Willow we have another amenable tree, furnishing materials of value for domestic purposes, especially the osiers and the chip-yielding willows.

The bark of numerous cork-bearing trees is of value either for direct use or on account of furnishing tanning or dyeing substances. The outer bark of the paper-birch is stripped away in large sheets, and rapidly converted into excellent and graceful canoes by the Canadian Indian, who sews together the fragments with thongs cut from the hide of the moose-deer; whilst of the white-birch bark, trays, baskets, and ornaments, embroidered with the hair of the same animal, are made, pleasing in colour, light and pretty. The uses to which cork, itself the outer bark of a species of oak, indigenous in Southern Europe, are applied are too many and familiar to be enumerated here. In the Exhibition several ingenious models are constructed of it; and a novel application is shown in exceedingly light hats made of cork cut into thin sheets. The bark of an Indian species of birch is used as a substitute for writing-paper. The peculiar smell of Russian leather is derived from an oil distilled from our common birch, and used in the dressing of that material; and from its sap, a kind of wine, sparkling to the eye and agreeable to the palate, is produced by fermentation; whilst several species of the same tree yield sugar. The bark of the aspen is exhibited by the Russians, converted into mats.

The nettle-tribe, regarded in its widest extension, is a fruitful source of valuable vegetable products. It furnishes fibrous substances of great value; above all hemp. The *Urtica tomentosa* of India yields a fibre used for ropemaking and the construction of mats, and the *Borneria sinica* or China-grass is a nettle imported in large quantities from China into England, for the manufacture of yarn and fine cloth. The fibre of the *Artocarpus* is exhibited among Indian products. The yellow dye-stuff, fustic, is the wood of a species of mulberry. The beautiful anise-wood is the timber of a *Breusium*. Many of the fine yield canoe-houes, furnished also by several other plants of this order, and by members of the neighbouring tribe of *Euphorbiaceae*, the sponges. This substance is yielded by the milky juices of several plants belonging to very different natural orders. Useful as it is, but few nations have applied it to manufacturing purposes; and the display of indurated fibres is almost entirely, in the Exhibition, confined to the departments of Great Britain and the United States. The spurge-family supplies some serviceable medicines, especially the croton, and castor-oils, and food, as the cassava; but with these also not a few poisons. The yallow-tree of China, the seeds of which furnish a fatty matter manufactured by the ingenious celestials into candles, belongs to this group as well as our own box, the wood of which is prized by engravers, and has been applied with success to ornamental carving; and turnsole, a blue dye, is the product of *Oreophora tinctoria*. Sandalwood, from which such exquisite boxes and cabinets have been carved by the natives of India, is the timber of certain trees of the order *Santalaceae*. Fibrous tissues capable of being woven are furnished by several plants of the *Daphne* tribe, and the inner bark of one of them, the *Lagotis linearis* is a natural lace in itself. The laurel and nutmeg families, chiefly composed of tropical plants, yield not a few of the best of spices. The greenheart wood, exhibited in the Guinea collection, belongs to a tree of the former tribe. In the family of docks and buckwheats, the *Polygonaceae*, we find rhubarb, the product of various species of *Rheum* chiefly inhabitants of temperate and cold climates. The remaining families of exogens, deprived of a corolla, produce a few medicinal or food-plants, but none remarkable for their value in the Arts.

Among the tribes of exogens that possess a conspicuous corolla, the first which attracts our attention as furnishing substances for use, is one familiar to the lovers of gardens, because it includes and is named after the verbena. In an economical point of view it derives its value, not from such small herbs, however pleasant to the eye, or sweet their scent may be, but because it boasts of one of the most valuable of timber trees, as well as one of the most gigantic in the world, — the teak tree of India. The neighbouring family of labiate plants is remarkable for the sweet scents and aromatic herbs, the lavender and rosemary, hyssop and peppermint, patchouli and thyme, all yielding volatile oils, and many among the most favourite subjects of the perfumer's skill.

The fougere and the figwort, like doctors, ready to kill or cure, stand beside them, and not far off the nightshade and tobacco-plants, with their associates the capricious and love-apples; a strange mixture in one family of man's deadly enemies, with several of his valued friends. The burgee brings alkalies; the bindweeds, scammony; the trumpet-flowers, scammony; the gentiana, bitters; thus do we find among the most beautiful of flowers, physic and food, poison and tonic, associated with elegant shapes and brilliant colours. The olive tribe gives us the oil from the fruit of its typical tree, and the wood of our own ash. Many of the exotic *Sapoteae* also furnish oil; and one of the most interesting examples of vegetable oils in the Exhibition, is the Shea butter, contained in the Niger Collection, since it calls up our recollection of the adventurous and unfortunate Mungo Park, and his account of its importance to the tribes of central Africa.

To us, however, a plant belonging to the same natural order, but whose value was unknown in the days of the explorer of Negroland, is of far more consequence; I allude to the *Lessertia fruticosa*, the source of the gum-elastic, known as gutta-percha, one of the most useful substances introduced into the arts during the present century, and only a very few years ago. The ebony-trees belong to another of this group of families; the ebony in the hard or old wood, the dusky beauty of which is fully developed in the exquisite cabinets scattered through the Exhibition. The heaths, beautiful as they are, do not offer much that is useful; the wood of the strawberry-tree is, however, not without merits, and can be employed for small articles of furniture with effect. From the vast order *Compositae*, with its fearful array of ten thousand species,—food in many shapes, and physic in more, are the chief contributions; the safflower, yielding a dye which appears disguised in the shape of rouge, and the cinchona, exhibited in all its stages, until, as with commendable truth and simplicity the labelling of the specimens assures us, it is "ready to be made into coffee," have their due places in the Crystal Palace. The moderns have had no small part in giving beauty to the fabrics of cotton, and their tribes and board in cotton, of its services, as furnishing the source of a beverage with which few civilised, and even uncivilised, nations could now conveniently dispense.

The exogens with flowers, the petals of which are constantly separate, number among them many families serviceable to man. Valuable food-plants and gum resins are supplied by the too-much-abused umbellifers. The gourd furnish both food and vessels adapted to hold it. The myrtles, under strange and unaccounted shapes, arrest the attention of visitors to exotic and colonial collections, some as sections of trees of astonishing size, such as the great blue gum-tree (*Eucalyptus globulus*) from Van Diemen's Land,—or as polished woods of rare beauty; others among the spices and condiments in the shape of cloves and pimento, or as dried fruits, such as pomegranates and Brazil nuts. The rose tribe is represented, in the home department, by its pleasant array of native fruits, and in the Indian bays, by richly-scented attars. The pulse tribe has a gentler and more conspicuous show of grace, and very various are its products. Those valuable for agriculture and food, many in number, are sufficiently familiar. From it we derive many valuable woods; some of them are sought after for dyes, as Brazil-wood, log-wood, and Japan. Of all dyes indigo is that most valuable as an article of culture. Another herb of this tribe furnishes the Brazil hemp or sun, a fibrous substance of great strength. Catechu and div-div are imported from the East for tanning. Many and curious are the gums and balsams of the family; among others, gum-arabic, tragacanth, assafoetida, kino, and Balsam of Peru. Nor must we omit such old acquaintances as Tonkin beans, tamarind, and sesame, all of which may be met with in their proper compartments. The family of balsam-trees has its place here, supplying myrrh and oleumum, and in a neighbouring group we find mastic and turbinth, with the trees that furnish the brilliant varnishes of the East, and those that bear mangoes, cashew-nuts, and pistachio-nuts.

From the *Zygophyllae* we get the lignum-vitæ wood of the West India, and the small tree, the family be, hold a high place on account of including the flax plant; now, if the invasion of Chevalier Clausen, one of the most novel

AS CONTRIBUTING TO THE EXHIBITION.

features of the Exhibition, confirms by experience the promise which it holds out, it is likely to prove of greater value than ever. In a tribe not far removed, we find the vine, and next to it the mangrove tree, a collection in natural affinities confirmed by artificial customs. The aspens, mostly tropical, appear in the shape of the curious Litchi fruit, sent from the Indian Archipelago. The maples present themselves as beautiful furniture woods, several varieties being sometimes derived from the same tree. The wood of the sugar maple of Canada is the bird's-eye and also curled maple of the cabinet-maker. The gamboge trees furnish well known resins and curious butters and oils, as well as the world-famed Mangrove. The orange tribe manifests itself in fruits and perfumes. Tea is the product of plants very nearly allied to *Cinchona*; in the Exhibition the tea-growers of India compete with those of China. Camphor is a secretion of a tree of the order *Dipterocarpaceae*, a native of the Indian Archipelago. Cotton is the hair of the seed of certain plants of the mallow tribe, of which some other kinds produce useful, though less known fibres. Weld and annatto are products of families in this section of the vegetable series. The great tribe of *Cruciferae* is remarkable for the number of valued food-plants, the kaleworts, that it includes; in it too, we find the dyestuff wool, with which our British ancestors were content to decorate their shivering bodies. Opium is the chief representative of the poppy family. The water-lilies, though not present in person, exercise no small influence on the ornamental departments of the Exhibition; for their newly cultivated chief, the *Victoria regia*, one of the most wonderful, as well as beautiful, of flowering plants, has, with singular propriety, been the chosen model of not a few objects of manufacture woven, carved, or worked in metal, sometimes with admirable success, sometimes without a just understanding of the grace and delicacy of this exquisite plant. The *Jacoba* tribe, a group yielding several prized fruits, of tropical regions, furnishes the valued linseed. The few remaining families of note are chiefly marked by medicines or poisons.

III.

WHEN we wander through the avenues of the Crystal Palace, charmed and interested by the manifold proofs of man's skill that attract us on every side by their ingenuity, beauty, or usefulness, we are apt to forget and overlook the materials that have been furnished by nature to serve for the construction of our fabrics and manufactures. The main purpose of the Exhibition is certainly to display the results of man's workmanship, and to convert any part of it into a vast museum of natural objects would be foreign to the great design that animates the whole. Wisely, however, it was resolved not altogether to overlook the unchanged elements of the products of skill, and the more important raw materials have their places in the arrangement. Those which are derived from the vegetable world occupy considerable space, and are, in many instances, classified with much thought and science.

There is one collection of vegetable substances in the Exhibition, pre-eminent for scientific and instructive arrangement, that of the vegetable productions of Scotland; it is a museum in itself, and worthy of a place in a national institution. It has been devised and carried out with equal skill and science, and reflects the highest honour on its authors, the Messrs. Lawson of Edinburgh. The several plants are classified according to their uses: a well preserved herbarium specimen exhibits the form and characters of the growing plant; if the product valued be a fruit, a root, a tuber, or a seed, it is exhibited not merely in its dried or preserved condition, but if unpressurable or incapable of retaining its first appearance, is carefully modelled of the natural dimensions, aspect, and colour; the valued substance produced by it, whether grain or flour, or dye, or extract, is displayed by its side; a carefully prepared label informs respecting its names, popular and scientific, its class and order, and other particulars of consequence to be known. Now the idea of this collection is one that might easily be developed into its

full dimensions; what has here been done for Scotland might be done for the world, and most worthy would such a display be in the national museums of an empire like ours, seeking, as we do, all over the globe for materials to supply the enterprise of our manufacturers, and to extend the commerce and increase the wealth of Great Britain. Such collections carried out to their full development, scientifically and commercially, would be in the highest degree instructive, and most certainly would meet with the warmest appreciation from the productive and intellectual classes of the British community. A spacious room devoted to the display of animal products used in the fine arts and manufactures would add to the attraction of the British Museum; the Kew Collection should be enlarged so as to illustrate in their utmost extent the value and applications of the vegetable world; the Museum of Practical Geology has already undertaken, with the prospect of much public benefit, the display and illustration of the useful and ornamental applications of the mineral kingdom. Now is the time, when this unprecedented accumulation of materials has been brought together, to commence or complete such worthy projects.

The world of plants has its place and representatives in the congress of use and ornament, now holding its sitting within the new Palace of Hyde Park, under various and very different forms. Honest, hearty food-plants have come without veil or disguise, proud of their own wholesome natural aspect, and disdaining to appear otherwise than that which they are. Plump white wheat sits beside substantial, and pompous ears of Indian corn; its plain dress, and orderly ears, albeit though it appears for the most part in collections from ancient monarchies, contrasting severely with the ruby and gold uniform of twelve-headed monarchs that glitter beneath the republican starred and striped banner. More humble oats and barley, peas and beans, range themselves for the most part on the benches of temperate states; whilst the boys devoted to the products of warmer climes, contain rice, meek and pale, though coming from the sunny tropics, and grains with strange names and unfamiliar aspect. The coffee grains of Arabia seem in opposition to the hops of Kent; and the "Tick beans, with white eyes, grown at Hengrave," may well stare when they find themselves in the neighbourhood of sugar-canes and sugar-beets from Surinam. Like severe and laud critics are the vegetables in vinegar, that look so pulpy and tempting in their clear and acid envelopes, contrasting with the strange fruits and curious spices that are ranged in asymmetrical compartments beneath them.

Balsams and resins, oils and gums, sugars and starches, the products of the chemistry that is at work in the minute tissues of plants, directed by the mysterious agency of the vital influence, are exhibited in wondrous variety, and many from strange and unexpected sources. The more we know of botanical science, the greater will be the number, and more certain the sources of these vegetable secretions capable of being turned to useful account. But a few years ago, and esculentous and grata-percha were scarcely recognised, and almost unneeded. Now our manufacturers would suffer materially were the supply of these substances to cease. When we consider what the gun-clasies essentially are, when we regard them by the light of vegetable physiology, we cannot doubt but that many more plants, yielding valuable products of a similar nature, will be brought to light, especially in the unexplored regions of the Indian Archipelago. It is the same with the vegetable dyes, at present few in number to what we have a right, reasoning from analogy, to expect. Cordage and clothing materials furnished by plants, occupy, as they justly should, a conspicuous place in the collections from every land; yet many known to be used, and of considerable value, are either absent or imperfectly represented; though, as if to compensate, not a few now or as yet only partially employed textile fabrics, suggest to us that we are far from having obtained a full knowledge of the resources in this department of the vegetable world. For when the origin of a substance so beautiful and common as the rice-paper of China is still a matter of discussion and enquiry, we may fairly hope for new information respecting old, and

THE VEGETABLE WORLD.

fresh discoveries of new materials. Great and successful attempts have been made to exhibit the variety of useful and ornamental woods now selected for building and cabinet-making; and no one can glance at the beautiful collections exhibited in the south-western galleries without perceiving that, however exquisite the furniture so profusely displayed on the ground-floor may be, there are ample resources remaining unemployed that will render such manufactures, sooner or later, yet more admirable than they now are. The numerous portable devices for seasoning and preparing woods are all so far successful that we may look forward to the employment in furniture-work of many kinds of curious grain and colour at present seldom, and not always successfully, employed. Much of the furniture in the Exhibition, upon which infinite labour and marvellous skill have been bestowed for the production of sculpturesque effects, is constructed of woods chosen without regard to the character of the carver's design, which consequently materially suffers. A more minute knowledge of the colour, qualities and capabilities of ornamental timber, would prevent such mistakes.

The indirect influence of the vegetable world upon the Arts and Manufactures, must not be passed over without a remark. The share that it has had in giving origin to the beauty and variety of furniture, ornaments, and fabrics, displayed under so many and admirable forms in the Great Exhibition, is too important not to be strongly insisted upon here. Our silks and cottons, our muslins and poplins, our shawls and damasks, our sideboards and cabinets, our porcelain and glass, would make a comparatively graceless array, were the infinite variety of design and colour suggested by flowers and fruits, leaves and stems, herbs and trees, taken away. Yet, when these representations are scanned by a botanist, he is apt to regard them with a dissatisfied eye, not because they do not fulfil the requirements of scientific accuracy—that would be absurd to exact—but on account of the ignorance they too often make manifest of the riches suited to his purpose lying almost within the designer's grasp, had he known where and why to seek for them. A small amount of botanical study would prove a profitable capital to the ornamental draughtsman. Science would teach him how every stem is adapted for its own peculiar style of foliage, and how an incongruous mixture of leaves, fruits, and flowers, cannot give the pleasure to the eye that, even when it is unintrusted, it so rapidly and delightfully derives from the contemplation of combinations, the elements of which are truthful. The leaf of a monocotyledonous plant attached to the flower of a dicotyledon strikes the spectator who has no knowledge of botanical science as unnatural, for the eye learns, and compares, and recollects, even when the understanding is obscure and cloudy. To the botanist, who sees in all the structures and stages of vegetable organisms heaven-derived beauty, and the manifestations of Divine foresight and love, such mistakes become still more offensive. The mere literal copying of nature is not what is demanded; that would be contrary to nature's own plan. The value to a designer of a scientific comprehension of his models, is the insight it gives him into the possible variations of the original, and the inexhaustible sources of grace and beauty, whence so much that is new, and yet consistent, may be derived, towards the following out of Nature's own idea.

All substances in which vegetable forms have been imitated, whether by modelling, carving, casting, printing, painting, or inlaying, are not equally well adapted for representations of all kinds of ornamental plants. Leaves with broad and coriaceous lobes, borne on stout and stiff-jointed peduncles, suit castings in bronze and iron, or carvings in low relief on wood, but delicate and pinnated foliage, or slender fern-fronds requiring high or complete relief, and intended to stand out light and prominent, require hand-workmanship in the more precious metals, and can neither be carved nor cut with natural effect.

Perhaps a portion of the unpleasant effect produced by such experiments, depends upon the extreme difficulty of imitating, very perfectly, the minute features of the parts of plants. For, in the exquisite metal castings of hramble and other leaves, done from the plants themselves with a perfec-

tion so extraordinary that, even under the lens, the minutest hairs and finest venations of their surface are seen projecting, executed by some novel process, invented by Captain Ibbetson, and placed in the Exhibition along with the electrolytic plants to which we have already alluded, the effect to the eye is exceedingly pleasing. These castings suggest the probability of an extensive use of living plants, well selected, with reference to their capabilities for decorative effects, depending entirely on form and surface, becoming a new and delightful sort of furniture ornament. Thus, climbers remarkable for elegance of foliage, might be twined round the frames of mirrors, and along the cornices of rooms, the flowers and leaves of real plants becoming perpetuated in metal, never mure to droop or wither. The choicest leaves might be converted, with little labour, into silver and golden dishes surpassing the craft of the cunningest goldsmith, and our desert might be spread under the shadow of metallic fruits and flowers as true to nature as if the transforming touch of Midas had collected them.

One word more, for the plant's own sake, before concluding. When we rest on the velvety grass, under the shadow of some spreading tree, whose gnarled and sturdy trunk was stout and strong whilst our great-great-grandfathers were little boys, when we idly play with the painted and sweet-scented blossom of some summer flower that we have plucked in the sunny meadow, pulling sepal from sepal, and petal from petal, shaking the pollen from the stamens, and cutting open the pulpy germen to note the nascent ovules, let us not merely bless the tree for its shadow, or the flower for its curious beauty, but look upon them affectionately as living beings whom the one great Creator has placed in the same fair world with ourselves, to pass, even as we do, their lives freely and yet in continual accordance with His allwise designs; each leaf, each petal, each stamen, each pistil, playing its separate part in the vegetable commonwealth to which it belongs; some industrious and perpetually striving for the good of the whole, some seeming to lead a fleeting existence of brilliant display—the leaves provident for the coming day, the flowers provident for the next generation; all working, not merely for themselves alone, but forming wood, and fibres, and nutritious food for man, a being of whom in their passive undressing life they take no note and have no knowledge. There is a deep lesson and politic meaning contained in the scientific idea of a plant—a lesson and a meaning not dissimilar from those that constitute the true moral of the Great Exhibition.



THE MACHINERY OF THE EXHIBITION.



AS APPLIED TO TEXTILE MANUFACTURES.

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THE term manufacture is no longer confined to its original signification—the production of human manipulation—but is now generally applied to articles made by machinery, from raw materials, supplied by a beneficent Providence, for adaptation by the industry and ingenuity of man for the wants and enjoyments of civilised society.

To some minds manufacturing has lost its dignity by the substitution of the iron arms and fingers of machinery, for the bone and sinew and nerves of the cunning artificer who, within little more than a century, produced all that then existed of manufacture. But this is surely a misconception; and a very different impression will, we conceive, be left on the minds of all who have had an opportunity, however cursory, of contemplating the tools and machinery applied to manufactures, so liberally displayed in the Exhibition of the Industry of all Nations, and which we are now to endeavour briefly to elucidate and explain.

The object we have in view is to convey to general readers such information on the principles and exact functions of manufacturing machinery, as will increase their interest in what they may have seen for the first, and, in many cases, it may be for the last time, in the Great Exhibition, and enable them to carry away with them truer impressions of the amount of thought and ingenuity that has been expended in the creation of the automatic fabricators of the most complex as well as simplest necessities and conveniences they find in use in their routine life, than they otherwise could do. It is not our intention to describe this manufacturing machinery in detail, suited for the instruction of manufacturers; we shall only attempt to give a correct account of the mechanical processes exhibited, sketched with

the view of making their characteristic excellencies understood, but without any pretension to set forth their comparative merits further than mentioning those features that display the progressive improvement of the various processes selected for our purpose.

As in the labour of the artificer there is combined a physical exertion and a manual dexterity,—the latter an emanation of mental exertion, the former requiring a regular supply of food and raiment to the body, in order that the "right hand may not lose its cunning,"—so in manufacturing machinery, there are two great principles developed; there are machines which are adapted to receive and modify the powers of nature, and machines which are contrived for the transport and for the change of the force or texture of materials.

Every machine is contrived to perform some given mechanical process, which supposes the existence of two other things besides the machine, namely, a moving power and work to be done, i.e., an object subject to the process in question. Machines, in fact, are interposed between the power and the work, for the purpose of adapting the one to the other.

As an example connected with our subject, the old spinning-wheel may be cited, in which the spindle and fly are made to revolve by application of the foot to a treadle. Here the motive power is derived from muscular action; the operation of spinning is carried on by drawing out the fibre from the rock, and supplying it regularly to the fly, which is caused to turn rapidly and twist it into a thread or yarn. The arrangement of the form of the fly and spindle, and its connection with the foot in such a manner that the pressure of the latter shall communicate the required motion to the former, is the function and object of the machine.

This machine, we see, consists of a series of connected pieces, beginning with the treadle, the construction, position, and motion of which are determined by the nature of the moving power, and ending with the fly and spindle; but this is, in fact, the description of every machine. There is always one or more series of connected pieces, at one end of which is a part especially adapted to receive the action of the power—such as a steam-engine, a water-wheel, a horse-lever, a handle or a treadle. At the other end of each series will be found a set of parts determined in form, position, and motion, by the nature of the work they have to do, and which may be called the working pieces; between them are placed trains of mechanism, connecting them so that, when the first parts move according to the law assigned to them by the action of the power, the second must necessarily move according to the law required by the nature of the work.

There are, we thus see, three classes of mechanical organs independent of each other, inasmuch as, on the one hand, any set of operators or working parts may be put in motion by power derived from any source. Thus, a fly and spindle may be turned either by the foot, by water, or by steam. Again, a given steam-engine, or water-wheel, or any other receiver of power, may be employed to give motion to any required set of working parts for any process whatever. Also, between a given receiver of power and set of working parts the interposed mechanism may be varied in very many ways. Moreover the principles upon which the construction and arrangement of these three classes of mechanical organs are founded are different. The receivers of power derive their form from a combination of mechanical principles with the physical laws which govern the respective sources of power. The operators derive their form from a combination of mechanical principles with considerations derived from the processes to be performed. The principles of the interposed mechanism are purely geometric, and may be developed without reference to the powers employed or transmitted. Mechanism is a combination of parts connecting two or more pieces, so that when one moves according to a given law, the others must move according to certain other given laws. A train of mechanism is composed of a series of moveable pieces, each of which is so connected with the framework of the machine, that when in motion every point of it is constrained to move in a certain path, in which, however, if considered separately from the other pieces, it is at liberty to move in the two opposite directions, and with any velocity. Thus, wheels, pulleys, shafts, and revolving pieces, generally

THE MACHINERY OF THE EXHIBITION.

are so connected with the frame of the machine, that any fixed point is compelled, when in motion, to describe a circle round the axis; sliding pieces are compelled by fixed guides to describe straight lines, and so on. These pieces are connected either by contact or by intermediate pieces, so that when the first piece in the series is moved from any external cause, it compels the second to move, which again gives motion to the third, and so on.

The act of giving motion to a piece is termed *driving* it, and that of receiving motion from a piece is termed *following* it. The *follower* receives motion from the *driver*.

In the view we are about to take of the Manufacturing Machinery of the Exhibition, we exclude any reference to the *receivers of power*, important as is the part they play in the history and economy of manufactures. Our object is specially to record mechanical processes, and to give some idea of the mechanism of the machines applied to textile manufactures exhibited. We have chosen an order for treating of the mechanical processes by which textile fabrics are produced, which leads from the simple to the complex, and which shows the origin of the improvements that led to the wonderfully perfect machinery exhibited as applied to each and all textile fabrics.

These processes depend primarily on the nature of the materials—the raw materials to be worked up. *Silk, Cotton, Flax, and Wool*, require different methods of preparation for being spun and woven, the ultimate processes in the making of all textile fibres.

Silk Manufactures.—It would be out of place to enter into any details in regard to the little worm which produces the millions of pounds of raw silk annually produced and worked up on the continent of Europe, in India and China, and imported into Great Britain to supply this branch of industry.

In the French, the Milanese, the Piedmontese, the Tuscan, the Roman, Neapolitan, Algerian, Chinese, and Indian departments of the Exhibition, samples of the cocoons, and of the reeled or raw silk of these countries may be seen and examined.

The weight of cocoons varies according to the climate and management of the worms. About two hundred and thirty to a pound may be taken as an average, and twelve pounds of cocoons make a pound of raw silk. Thus 2760 worms are required for every pound of raw silk! For every million pounds weight of raw silk produced in France, it is reckoned that two hundred and fifty million pounds weight of mulberry leaves are consumed, and that five million of trees, of the average age of thirty years, are stripped to furnish them! Upwards of five million pounds of raw silk are now imported into Great Britain annually. In Britain the silk factories are almost confined to England.

The process of *Reeling the Silk from the Cocoons* is carried on in Europe in the months of July, August, and September, in establishments called *filatures*, and in the cottages of the peasantry of the countries where the silk is produced. The cocoons become an article of trade as soon as the insect inside has been killed by exposing them in an oven, or to the steam of boiling water; they are now to be wound off, or reeled. In the commencement of the operation, the cocoons, having been for a short time in a trough of hot water to soften their gaseous, the loosened ends are then taken (four together generally), twisted with the fingers, then passed through an eye on the end of a wire, and thence to the reel. Two *skains* are generally thus formed at the same time, a child turning the reel, and a woman attending to mend the threads or fibres. The reel is so constituted, that while revolving it has communicated to it by wheel-work, a lateral traverse from right to left, and from left to right. The amount of traverse for each revolution being regulated so that the thread of one revolution does not overlap the other, for if it did, the natural gumminess would cause these threads to adhere. The extent of traverse is about three inches, and in the time employed in reeling this breadth of threads, the gum dries sufficiently to prevent the threads from sticking to each other at the points of crossing.

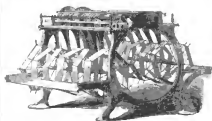
All kinds of silk which are simply drawn from the cocoons by the reeling, are called *raw silk*, but are denominated *fine*

or *coarse*, according to the number of fibres of which the thread is composed.

The factories in which raw silk is spun into silk-thread for weaving are called *throwing mills*, the term *throwing* being formed from the word "throw," in the obsolete sense of "to twist," "to twine."

In 1719 a silk-throwing mill was erected at Derby. This was the first in England, and it still exists.

Winding is the first process which the raw silk undergoes. *Winding*—that is, transferring the silk skains on to bobbins, was formerly done by hand, on machines carrying four or six reels and as many bobbins. The winding machines now are driven by power of steam or water, and are arranged in frames carrying as many as one hundred *spindles* or reels. The winding requires the unvaried attention of children to mend the threads that break as well in this process as in the next. There are about eight thousand children under thirteen years of age employed in British silk factories.



Our drawing represents the winding machine as made by Mr. Frost of Macclesfield, the skains of raw silk are put on to the *spindles* which are *stepped reels*, with strong cross bars to form the fork in which the skain lies. The sides of the *spindles* lie loosely in centres, and the framing descends no lower than this centre, so that there is very little liability to knocking. The thread is passed through glass guides, arranged on a traversing guide bar, to the bobbins.

The bobbins are turned by double wooden rollers, turned out of one solid piece of wood causing them to run with greater truth than ordinary rollers: and by their being covered with leather, the use of chalk or rosin, to get adhesion is unnecessary, and thus a source of soiling the silk is avoided. By working with double rollers as is done in the machine, it is impossible that the *checks* and *quindies* of the bobbins can wear out.

The motion of the guide bar is produced by oval toothed wheels. The object of this motion is to cross the threads diagonally on the bobbins in order to prevent the threads from sticking together, that is to ensure that the unwinding them shall take the least possible force, and proceed without entangling. The drawing No. 1 represents only a small part of the length of a winding machine.



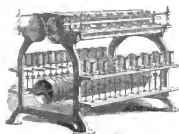
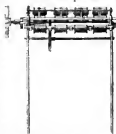
Cleaning.—The silk having been transferred from the skains to the bobbins has to undergo the process of *cleaning*. This process is performed in transferring the silk from the bobbins produced on the last machine, to the bobbins or trays in the machine represented in the accompanying drawing.

The silk has to be cleaned to rid it of adhesive gummy matter and dust. For this it is passed through a cleaner knife or double knife placed on the guide rail, by the motion of which the thread is uniformly distributed on the new bobbins. If by any accident a thread be left out of the knife,

AS APPLIED TO TEXTILE MANUFACTURES.

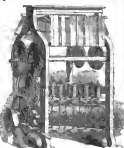
the fault is easily detected by the ridge which will appear on the bobbin. The cleaner knife rail is fitted up so as to move in a slot, and thus the degree of separation of the knife edges is adjustable to the quality of the thread or silk to be cleaned. This operation was formerly combined with a doubling of the threads, and a system of drop wires was introduced for stopping the bobbins when threads broke. This is now dispensed with, and the *spinning and doubling frame* in the annexed drawing performs the operation by one process and disposes with the *storing of the silk*, which was formerly necessary.

The silkworm-threads, perfectly cleaned, and become of a brilliant glossy appearance, are transferred to the spinning and doubling frame. In this machine, the threads from two or three of the bobbins from the closer are not now only wound together in contact upon another set of bobbins, but they are at once *spun* together. The lower set of bobbins are



placed vertically on spindles driven by bands from a large drum, and then, in being transferred from one set of bobbins to the other, two or more threads are laid together. The *twist*, or, more correctly speaking, the angle of lay, is kept exceedingly uniform, the *bobbin going slower as it fills*, by working on intermediate friction roller (not seen in drawing). The *gander* is, of course, attached to this machine again with a very slow motion, so that the doubled and spun thread is laid very uniformly and closely on the bobbins, which are now transferred to the *throwing mill* or machine. On this machine the doubled and spun threads are transferred from bobbins on to swifts or reels, and thus become *hanks* of silk in the state in which they are sent to the weaver. In this state, it is called *single, tram, or organzine*, according as it has been made into hanks after being simply cleaned and twisted, after being doubled and twisted, or after being spun into thread by a second spinning operation.

The fineness of the silk is determined by the number of warp lengths, measuring seventy-two yards, in the ounce;



fine warp silk, for instance, runs about eight across threads. That is to say, there are upwards of six miles of thread nearly in an ounce, or one hundred miles in a pound weight.

The mechanical processes of preparing and spinning silk are of a very simple character, and form a striking contrast to the processes to which cotton, flax, and wool have to be submitted ere they are fit for the loom. *Silk-rearing* is, on the other hand, attended with difficulties which are not met with in weaving the yarns spun from the other textile fibres of which we are to treat.

The machinery of cotton-manufacture has its application even before the "raw material" is brought to the factory.

The "cotton-wool" has to be separated from the seed. The machine now almost universally used for this purpose is the *seed-pick*, the roller-gin having been supplanted even in India. The best example of this machine is exhibited in the United States department. Till 1793, when Eli Whitney invented the *seed-pick*, the wool of the green-seed cotton could only be separated from the seed by an amount of labour very discouraging to the growth of that hardy and productive article. By this invention, one man was enabled to do the work of a thousand, and there was no limit to the cultivation of the cotton save the limits to the acreage of suitable soil.

The quantity of raw cotton consumed in the cotton manufacture of Great Britain, in the year 1850, was 55,420,000 lbs., or nearly 815 tons per diem.

The machinery for manufacture of cotton—for performing the various operations that *prepare the cotton wool*, as imported from the countries where it is grown, for being spun and woven—are liberally displayed in the Exhibition by leading British manufacturers and by the French.

There are few things more interesting in manufacturing processes than the progress of the soft downy substance of the interior of the cotton-pod, with all its fine filaments and delicate colour, through its various stages, until it becomes a useful fabric for the daily wear of the industrious classes, or assumes those beautiful forms in which Art has added grace to mechanical skill and ingenuity. These gradations are at once so perfect and complete, while they are based upon the most admirable system of orderly progress, that cotton-spinning becomes a science of no ordinary character when it is carried to the perfection to which we see it here displayed. The examples exhibited illustrate the various gradations of the coarse and fine manufacture—there are cases commencing with a specimen of Sea-Island cotton, and having every stage of progress up to nine-fold sewing thread, and muslin and figured lace. The only drawback to their great interest is the crowding together of so many specimens in so small cases, since there is some difficulty in distinctly separating them. This is the more to be regretted, as the connection of the raw material with the examples around is so admirably illustrated, and, if studied in connection with the machinery, is capable of affording valuable lessons.

The yarns, exhibited as the basis of other products, show to what an extent the ingenuity of man can be carried, when employed in a given direction. There we have specimens of yarn spun by machinery, which is of so delicate a character, that the fibres of cotton can only be discovered in the fabric by the aid of the microscope; and so delicate is it that it fails to pieces by handling. This curiosity of manufacture is exhibited by Messrs. Thomas Houldsworth & Co., of Manchester, and is the result of the energy and enterprise of Henry Houldsworth, Esq., of that firm. In the contributions of this establishment we find specimens of cotton yarn ranging from No. 100 to No. 700, in single yarn; and No. 100 to No. 670, in double yarn, or lace thread. These figures express the number of hanks to a pound weight, each hank being 840 yards; and the last named number of 700 is single, and 670 is double yarn, is the triumph of cotton-spinning for all practical purposes, since we find that a pound weight of cotton is elongated, in the first instance, to a length of 336 miles; and, in the other, to a double thread 324 miles, at a cost of 28d., as the price of a single pound weight. The most remarkable example, however, is the specimen shown as

THE MACHINERY OF THE EXHIBITION,

No. 900, both of yarn and thread, as a curiosity, by which a single pound of cotton is extended to 430 miles. So late as 1840, 350 was the finest yarn attempted. In 1811, Messrs. Houldsworth spun 450, which was then considered as the limit. Another still more astounding specimen exhibited by Messrs. Houldsworth is that of 2150 yarn, in which we may fairly presume that they have reached the limit at which the fibre will at all cohere. A single pound of this yarn would yield the extraordinary length of 1020 miles!

The first operation in a cotton mill is to open up the cotton into its original spongy state and shake out any earth or vegetable matter accidentally mixed with it.

In order to mix the cotton, several bales of the same, or of different kinds, are put together in a "hing." A tool, like a hay-rake, is employed to draw down and tear asunder the agglomerated mass of cotton as it is wanted for the picking, and other cleaning processes. Fine cotton, such as the best Sea Island, is still sometimes cleaned and opened at first by the hand-labour of women and children; but various machines for accomplishing the same object have been contrived and applied to all qualities of cotton wool.

The *willow* is the machine in general use for opening out the entangled flocks of cotton.

A cylindrical cage, made of *willows*, with an axis carrying cross arms, and having a rotary motion, was employed of old in Normandy for cleaning cotton-wool, under the name of *le panier de Normandie*. This simple machine is undoubtedly the original of the modern English willow, which has undergone various modifications, retaining, however, the essential features of its type.

We do not think it necessary to describe the willow properly so called, although the "conical willow," the most improved machine for this process, is exhibited both in Britain and in France. We take Calvert's patent machine for opening and cleaning cotton, as exhibited by Messrs. Hibbert, Platt, & Sons, as the most recent means of effecting this operation. This is, in fact, a scutching machine, so arranged that the preliminary process of willowing is performed within it.

The besting action is produced by rollers with long projecting fence-edged teeth. The cotton is taken, in weighed quantities, from the hing, spread very uniform by hand on a feeding apron, which presents it to fluted rollers. These rollers present it to the toothed beaters, revolving at great speed, and so arranged that all the coarser impurities fall through. From these *beaters*, or *scutchers*, the cotton is taken up by fluted rollers, which, in their turn, pass it on to a hollow, serrated cylinder, revolving at great speed, and by which the fibre is drawn out, while the minute seeds pass through apertures left by the saw like teeth on the cylinder; and the interior of this being in communication with a fan, which sucks through the air, the dust and fine impurities are almost completely got rid of. This cylinder is cleaned of the teased cotton by means of brushes, which deliver the cotton on to fluted rollers so regularly, that it comes out of the machine lapped into the form of a broad, felt-like web of cleaned cotton.

The web of cleaned cotton thus obtained is passed through a *lapping* machine, and to this machine it undergoes a further teasing, in such a manner that several laps of different qualities of cotton from the scutcher may be mixed in this machine, so as to obtain a uniform quality of *staple*. The cotton, once more formed into a fleecy lap, is brought out by rollers, and delivered on to wooden *lap cylinders*. This makes the third mechanical process to which the cotton fleece has been submitted.

The scutching machine was originally invented by the late Mr. Soudryns, of Joliette, in Hampshire; and afterwards improved by Mr. Cooper, of the same place. Mr. Calvert's scutcher is, perhaps, the most perfect machine of the kind in use in any country.

From the lap machine, the cotton passes to the *carding engine*, or *cards*. The object of the carding operation is to separate or comb out the fibres of the cotton, which are still entangled in small tufts, so as to bring them into as perfect parallelism as possible. For this purpose the cotton is put

through a long series of combings, which are effected by the reciprocal action of two surfaces which are mounted with slightly bent elastic wire points.

To Arkwright belongs the honour of having made the cylinder card a practical machine. This was about the year 1770.

Carding engines, says Dr. Ure, may be defined to be brushes of bent iron wire fixed in leather, applied to a set of cylindrical and a set of plane surfaces, the former being made to revolve so as to sweep over the surfaces of the latter at rest. Sometimes large cylindrical cards work against the surfaces of smaller cylindrical cards moving at a *slow* speed; and sometimes both planes are combined in the same engine. The tufts or knots of cotton are held fast by the stationary or slow moving cards, while the quick moving cards tease out the fibres, and gradually, very gradually, disentangle them. Thus we can understand how faced cards, in which the cotton is exposed to an uninterrupted course of teasing, disentangle the long-stapled cotton better than the *spurred* or secondary revolving cards, which bring the tufts under the action of the great drum-card only once in each of their own revolutions. They exercise a greater teasing force, and are therefore used for coarser and shorter stapled cottons, with which rapidity of work is an object of importance; in fact, much more cotton can be passed through in the same time, when both the main card and the counter cards revolve; and as the latter require less frequent cleaning than what are called the *flat-top* cards, this system is generally used in preparation for the lower counts of spinning; and occasionally in combination with fixed tops in that of the middling fine yarns.

The filaments, after emerging from the *flats*, lie in nearly parallel lines among the card teeth of the drum, when they are removed by a smaller drum card which turns in contact with it, called the *doffer* (stripper) or *doffing* cylinder, and is covered spirally with fillet cards. By its slow rotation in an opposite direction it strips the loosened filaments from the drum, and thus clothes itself uniformly with a fine fleece of cotton, which is shorn or combed off from the opposite side of the cylinder by the vibratory action of the *doffing* knife.

This knife is a blade of steel, toothed at its edge like a fine comb, and it is made to comb downwards with a rapid shaving motion along the edge of the cards. This is Arkwright's justly celebrated *comb* and *comb* contrivance. This admirably designed instrument doffs the cotton in a fine transparent fleece, and is beautiful to look upon. It is gathered as it comes off the whole width of the card, and passing through a funnel-shaped piece is gradually compressed into a riband and drawn through rollers in front of the engine. These rollers form the *card end* or *sliver*, which remains to be treated by the next process—*viz.*, to be *dressed*. This is nothing more than a laying of forty slivers into one *first lap*. These forty slivers being the products of as many carding engines, and sometimes containing the fibres of many different varieties of cotton of various staples.

Uniformity and *parallelism* in the fibre are the great objects to be sought for in preparing cotton for the process of spinning.

The laps from the doebing machine are worked through a set of what are termed *finishing cards* which are used in many *coarser* and in all *fine* spinning factories. The finishing card does not differ in any essential respect from the *breakers* card. The large card-drum is generally surmounted by *urries* or *squirrel* cards instead of tops, such as are used in the preparation of inferior cotton wools for spinning coarse yarns.

In a *fine* spinning mill, seven finishing cards will turn off 100 pounds of Sea Island cotton in sixty-nine hours (one week). Three yards of the lap presented to these cards weigh only four ounces. These *seven finishers* correspond to *six breaker cards*. For a preparation, as it is termed (one set), twelve card-ends go to form the first drawing. In the breakers, 1000 grains weight of cotton are spread out upon seven feet of the apron-cloth to form one lap.

In such an establishment, 100 pounds constitute a preparation, which is confined to a given set of cards, drawers, and roving frames. One man superintends four such preparations.

In a *coarse* spinning mill (No. 30 and No. 40), the carding engines being surmounted with urchin cards, each does about 1000 lbs. per week. The drum makes 190 revolutions per minute.

The next process in cotton preparation is drawing out and elongating the downy slivers or ribands, to straighten the filaments, and lay them as parallel to each other as possible.

Before passing to a description of the process of drawing on the drawing frame, we must allude to the process of making *card cloth*, as exhibited in the Exhibition.

We have already indicated how much pains is taken to perfect the carding process of preparing cotton. It is the same for wool; and, in some respects, for the tow of flax. The carding depends more on the quality of the cards than upon attention or skill in the operatives or *card-tenders*.

To make *card-cloth*, lides of leather are cut up into strips, varying in breadth according to the purpose to which they are ultimately to be applied. These strips are passed between iron rollers, adjustable to different distances, and furnished with a sharp-cutting edge below, by which, in the passage, the leather is shaved off in its thickest parts, and made uniform throughout. These strips, thus reduced, are joined by bevelling off the ends for about an inch in length, applying to the bevelled surfaces a thin solution of glue, made of acetic acid and isinglass, and then subjecting them to a powerful press. The union is made so perfectly, that it is scarcely possible to distinguish the joint. A number of such pieces being united together in one length, the leather is fit for the operations of the card-making machine.

This machine delights all who look at its rapid and wonderfully accurate operation.

The card-making machine is an American invention; but the first patent for it was taken by Mr. Dyer, of Manchester. This was in 1811. Many patents have been taken for improvements since, Mr. Dyer himself having taken not fewer than five.

The mechanism is simple, and yet so complicated that no drawings, such as could come within the scope of this Essay, could represent it. The machines are variously arranged. In most machines the leather is placed vertically, as in that exhibited; in others, it is stretched horizontally. The process is the same in both. A bank of fine wire is put on a reel turning horizontally, at a short distance from the machine, and the end of the wire introduced into the frame. The machine being now put in gear, the wire is slid forward about an inch, and is instantly cut off at that length. Two side pieces of steel now press on the projecting ends of the wire, and bend the wire to the staple form, like a two-pronged fork. In the mean time two fine steel pricklers are pushed forward to form two holes in the leather. These are below the two ends of the staple, and on the instant they are withdrawn the staple is thrust forward into the holes, while a pair of nippers takes hold of the back of the staple, and gives it that slight bend which we have described as necessary. The staple entering in one operation is pushed home; at the next at the instant the new holes are made. The whole of these operations is performed in less than half a second. A slight movement of the leather sideways, after each insertion, provides for the continuous progress of the operation.

Hundreds of these machines are at work in Manchester, in Leeds, in Glasgow, and elsewhere. *Altogether*, many miles of wire, are worked up by these machines daily. The difficulty of making card cloth increases with its fineness. The French have carried this manufacture to great perfection, as exhibited in numerous cases of samples in the Exhibition.

The Drawing Frame. The drawing out of the cotton slivers is effected by revolving rollers, and to use the words of Dr. Ure, it can only be clearly understood by an attentive and minute consideration of the operation of such mechanism upon textile fibres. Arkwright was so impressed with the importance of his drawing-frame in automatic spinning, that when any bad work was turned out he immediately desired his people to "*mind their drawings*."

The cards straighten many of the filaments, but they also double not a few by catching them by the middle. The

drawing undoes all these foldings of the fibres when it is well conducted, and is, therefore, the most curious in a philosophical point of view, which factory genius displays.

The drawing-frame produces a succession of *slivers* which pass to the roving-frame.

Six slivers from the finishing cards are presented through the *curved guide-plate* to a first drawing-frame roller. The compound or *scutuple* sliver, in passing between the roller series, is drawn out principally by the front roller into a uniform attenuated and much elongated sliver, and two of these are generally drawn together through a conical mouth-piece, which delivers the new sliver into a revolving cone.

The rate of the surface speed of the front roller to that of the back roller varies from four, or six, to one; and that rate may be modified by changing certain wheels according to the size of the sliver that is desired. The difference between the speed of the two back rollers is no more than one tooth part; the middle roller serving rather as a guide in leading the filaments to the front roller.

The sliver thus drawn with multiplied doublings acquires a regularity of texture which, if not impaired in the subsequent processes, ensures a level yarn to the cotton spinner.

The scutupling of slivers is generally continued through two drawing-frames, and then twelve slivers are put into one, and drawn by a frame which feeds the *slabbing* machine.

The number of doublings varies according to the fineness of spinning for which it is a preparation.

The process of drawing being finished, the next process is the *twisting the slivers*—that is, *laying the fibres* together by torsion.

It were vain to attempt an account of the expenditure of thought which the production of the roving frames at work in the Exhibition has occasioned in the progress of the arrangements of the mechanism to the state of perfection there exhibited.

This beautiful machine, consists of several pieces of mechanism, which may be separately considered. There is a set of rollers, a *roller-head* similar to that in the drawing-frame, and there are *vertical spindles*, bearing on their tops a forked piece, called a "*Flyer*," of which one leg or branch is tubular, and serves to conduct the soft roving from the base of the spindle to the bobbin. By the revolution of the spindle and flyer the cotton *slab* receives its twist, and by the difference of the rotation of the flyer and bobbin it is wound upon the latter exactly in proportion as it is given off by the rollers. This gives the *torcion*. The winding-on takes place in a ratio compounded of the difference of the speed of the bobbin and flyer, and of the circumference of the bobbin.

"Were the winding on to be a constant quantity, like the motion of the delivering rollers, the product of the two numbers would remain the same; but when one of them alters, it happens to the diameter of the bobbin, which is constantly increasing, the difference between the number of revolutions of the bobbin and flyer must be decreased; a change produced by increasing the speed of the bobbins while the flyers revolve uniformly, in order to give a uniform degree of torsion to a definite length of the delivered *slub*. As, therefore, the up-and-down motion of the bobbin, in the distribution of the roving over its surface, must be decreased in a constant progression, according to the girth of the roving, so the rotation of the bobbin is increased by a motion compounded of the regular speed of the driving-shaft of the machine, and the decreased speed of the other parts. We cannot attempt more minute details of description of this machine."

The process of spinning thus commenced is finished on the stretching-frame—the *throstle* and the *mule*. The cotton from the roving-frames is *pieced* up to either the *mule* or *throstle*, and spun into yarn, according to the quality of yarn intended to be produced.

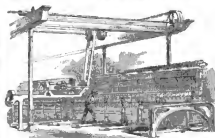
We have been so minute in our account of the preparation of cotton, that we have only space left for a very brief account of mule-spinning. The stretching-frame is, in fact, a mule without the second draught and second speed. In the bobbin and fly-frames, the amount of lay, or quantity of twist given to the roving, is as little as is compatible with their being

THE MACHINERY OF THE EXHIBITION.

unwound without impairing their uniformity. The object of the throstle is to extend the rovings into fine threads at the same time that it twists them by the rotation of spindles or flyers, and winds them upon bobbins, somewhat resembling what we have endeavored to describe in speaking of the bobbin and fly-frame.

The most interesting and perfect illustration of the throstle is that termed the *Longford*, exhibited by Sharp Brothers of Manchester. There are various modifications of it; but we have not space to do more than name the machine.

The manufacture and improvement of the form of spindles and flyers has occupied the attention of many machinists, and specimens are to be seen from Manchester, Salford, Lillie, and elsewhere, of the exquisite workmanship put upon these vital elements of modern spinning machinery. When it is



considered that these spindles and flyers revolve from 1000 to 2000 times in a minute, the perfection with which they must be finished and hardened, in order that they may move steadily and without self-destruction, and the consumption of power, may be easily conceived.

The Mule, or Mule Jenny, consists of four distinct sets of parts:—

1. The *drawing* rollers, already fully explained.
2. A *weave* carriage, of a length equal to the roller-beam, mounted with as many spindles as there are threads to be spun. This carriage runs upon wheels upon edge-rails laid in the floor of the factory, which allows the carriage about five feet of forward and backward motion, relatively to the roller-beam.
3. The *headstock*, or the mechanism, by which the carriage is moved to and fro. In some Mules the headstock is placed in advance of the roller-beam, towards the middle of its length. In others, the headstock is put behind the roller-beam, so as to leave the whole length of the roller-beam and carriage without interruption.

The general action of the mule may be stated as follows:—The rovings being passed forwards from their respective bobbins, set upright in the creel, through between the rollers, and their ends being attached to their respective spindles, the rollers, and carriage with its spindles, are all set in motion simultaneously: the carriage being made to recede from the roller-beam at a somewhat quicker rate than the surface-speed of the front rollers, or the delivery of the soft threads. This reverse of velocity is called the “*gain*” of the carriage, and is intended to render the thread *lean*, upon the principle above explained—namely, that the greater quantity of twist runs into the slenderer or weaker parts of the yarn, and obstructs their due extension; whereas, if the quantity of twist be skillfully adapted to the occasion, the thicker portions of the thread will have time to be acted upon by the gain of the carriage, till their substance is reduced somewhat nearer to the average thickness required. When the carriage has moved not about 45 or 50 inches, according to the fineness of the work, a general change takes place in the operation of the mule. The rollers suddenly stop, the spindles begin to revolve with nearly a double velocity, and the carriage slackens its pace to about one-sixth of its previous speed. This stage of the process is called the *stretching*, or the *draw*. The exten-

sion of the filaments, performed in part by the twin-roller system, is by this action carried on and completed in their softly twisted state. When the carriage, by its advance, has stretched the threads to the full extent they will bear without breaking, the second draw ceases by the stopping of the carriage, while the spindles still continue to revolve till the requisite quantity of twist is communicated, which is regulated by the twist-wheel having completed a certain number of turns. Upon the twist-wheel shaft a finger is usually fixed, which at each revolution disengages a catch, whereby the driving-strap is allowed to pass to the loose pulley, and the whole machinery stands still. In the hand-mule the spinner now puts down with his left hand the faller, or guide-wire, to the level requisite for guiding the threads into the proper winding-on position upon the caps of the spindles. In putting down the faller-wire, he at the same time unwinds that portion of the thread which is coiled spirally round the spindle, from its point to the nose of the cap, which he does by causing the spindles to turn the backward way, with his right hand working their main driving-pulley. This operation of undoing the coil is called the *backing-off*.

Whenever the faller has arrived at the degree of depression suited to the winding-on of the yarn, the spinner now reverses his backward motion, and winds on the yarn by causing the spindles to turn the forward way, while, at the same time, he pushes in the carriage at a rate commensurate with the revolution of the spindles. As the carriage approaches the roller-beam, the spinner gradually raises the faller-wire, to allow the last portion of the threads to be coiled again in an open spiral, from the nose of the cap up to their points. One operation being thus completed, another is immediately begun.

By winding successive portions of thread upon the spindles, a conical-shaped coil of yarn is formed, which, when sufficiently large, is slid off the spindle, in which state the article is ready for the market, under the denomination of *Cop* yarn. A considerable quantity of it, however,—particularly that destined to be dyed or shipped to foreign countries,—is unwound from the cops upon reels, and thereby made up into skeins or hanks.

The rendering the machinery which performs all these processes automatic was first accomplished by Richard Roberts, of Manchester, between 1830 and 1835, and his headstock is still unrivalled. The late Mr. Smith, of Denstone, and Mr. McIndoe, of Glasgow, have modified the headstock in various ways, and their *self-actors* have earned great reputation for excellence. The self-actor of Mr. McIndoe has much to recommend it, and has been applied to spinning numbers as high as 150 with success, whilst self-actors in general are not applied to higher numbers than 120. The hand mule has still to be used in spinning finer numbers of cotton, and in spinning wool.

Weaving.—If we take the term, weaving, in its most comprehensive sense, as applying to the process of combining longitudinal threads into a superficial fabric, it will have relation to the whole series of textile fabrics; not only those woven in the loom, but likewise net-work, lace-work, and hosiery.

First, of plain weaving.—By this term we mean the weaving of all varieties of lath manufacture; whether of silk, cotton, woolen, or linen, in which the warp threads introduce uniformly among the warp threads without producing twills, checks, stripes, sprays, or any variety of figures.

Calico, Irish linen, and plain silk, are good representations of this kind of weaving. If we examine any of these, we find that the cross threads pass alternately *over* and *under* the long threads, no cue thread passing over or under two other threads at once.

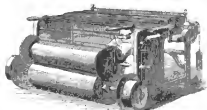
The long threads are called the *warp*-twist, or *organsins*; while the cross threads are called *weft*, *woof*, *abset*, or *tram*.

Next is the term usually applied to the kind of yarn used for cotton warp; *organsins* to that for silk warp; and some of the other terms have, in like manner, only partial application. We shall speak simply of *warp* and *weft* to avoid ambiguity. The *warp* is always attached to the loom, or weaving machine, while the *weft* is contained in the shuttle—a small, canoe-like instrument. The winding of the weft on

AS APPLIED TO TEXTILE MANUFACTURES.

the spindle, which runs through the shuttle, is a simple matter; but the arrangement of the warp in the loom is very important, and must be understood, before we can follow the details of weaving.

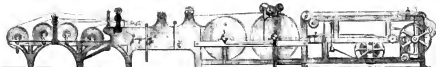
In the process of the cotton manufacture before the yarn comes to the warping-machine, it is wound from the cop on to bobbins about four inches long, and about three inches diameter: these bobbins of yarn are then taken to the warping-machine, for the purpose of the threads being laid parallel to each other, to make them into a *beamed* sort; and to facilitate the arrangement of them after being sized and placed in the bobbles or 'heddles' of the loom in weaving. In the old system of preparing the yarn, before its being placed in the loom, a cumbersome machine, called the warping-mill, was used instead of this improved machine of



Mr. Kenworthy's, which warping-mill was worked by hand. After the yarn had been made into a beamed warp, it was then taken to the old kind of sizing-machine, which soaked the yarn into the warm size (a kind of paste), then dried it, then squeezed it between iron rollers, and next it was reballed. The warp was then taken from this machine to a machine for winding it on a roller-beam, after which it was taken to the looming-frame, and next to the loom to be woven into cloth. But now, by the connection of Mr. Kenworthy's warping-machine, with the sizing-machine of Messrs. Hornby & Kenworthy, the process is made much shorter and more simple, and is wital systematic and mechanical.

It will be seen, on reference to the drawing, that the bobbins containing yarn are placed in a wooden frame called a 'creel,' so that they will revolve; the threads are then passed through a 'wraith' on to a roller-beam. The 'wraith' is for the purpose of keeping the threads separate and uniformly in the order in which they are intended to be wound off (after having passed through the size) on to the weaver's yarn-beam. In this machine is a beautiful adaptation of mechanism, by which the yarn may be backed off the beam, if by chance any broken thread has escaped the eye of the operative and got on the beam. This motion consists of a series of small cylindrical rods, so arranged that the threads of yarn pass under them; and supposing none of the threads had to break during the process, the beam would get filled without any necessity for calling this inven-

tion into action. But it so happens that breakages often do occur, and, as the machine works at a rather quick speed, those discovered threads get on to the beam before the operative has sufficient time to stop the machine. The machine is provided with two sets of driving-pulleys, one pair at each end of the driving-shaft; that pair which drive the backing-off motion work at one half the speed the others do. The leather straps or bands which connect these pulleys with the main shaft of the factory are so arranged by the one (that which drives the backing-off motion) being crossed and the other being open, that the motion of the machine can be reversed whenever the threads are broken. The series of cylindrical rollers performs their office by moving down slots made in the framing of the machinery, in their progress bearing down with them the threads backed off the beam, until the severed thread is discovered and united, when the operative sets on the machine as before the breaking took place, and the cylindrical rollers return to their former position. After the beam is filled by this machine, it is placed, along with five others, in the improved sizing-machine. These beams are placed in bearings so that they will revolve at the left end of the machine, and weights are placed upon their pivots, so that they are kept in their places; the six threads of yarn are then passed through an ordinary comb-bar or 'wraith,' and thus divided equally until passed through the bobbles, which, in this machine, are situated at the left end, for the purpose of effecting the cross shed, and thereby taking the 'lease' previously to the yarns being submitted to the sizing process. The 'lease' now being taken, and the cross band or threads being introduced for the purpose of 'loosening,' or drawing in of the weaver's beam, the threads of yarn are passed over a 'wraith' or comb-bar, formed by a row of teeth or pins of intervening spaces, for the purpose of laying the threads in parallel breadths side by side, and forming each division or band of threads (of any required number) into separate and distinct tapes or sheets (of any desired width), each thread being laid parallel side by side, and thus in lateral contact, the 'wraith' or comb-bar being allowed to vibrate or oscillate freely as the threads proceed. The continuous threads now being thus made or separated into breadths or bands, are now passed over a conducting roller and immersed into the trough containing the sizing material, which is here kept in a heated state by steam passing through a pipe into the trough, and thus boiled into the warp-threads as they pass through it and under the adjustable tension roller, which can be adjusted to any required degree of tension at pleasure, or can be raised up, when necessary, entirely out of the trough by means of a winch, worm, and rack, with which the pinions of the rollers are connected. The threads are then passed forward through a pair of squeezing rollers, and again similarly immersed in the trough containing the size, to finish the yarn; from thence they are passed around the drying cylinder, also heated by steam, and now assume the form of tapes or bands, the sizing material, by its slightly adhesive properties, causing the threads thus to adhere slightly together, and thus proceed in a tape-like form, being of course much stronger, more regular and even, and less likely to be broken or



disarranged thus in the old mode of sizing. A circular revolving brush is placed over the threads as they proceed over the drying cylinders, for the purpose of drawing or laying the fibres, and making the tapes or bands more compact and even. They now proceed in a sized, dried, and finished state, being conducted by two rollers through a similar 'wraith' or comb-bar, but of a much finer pitch, and by passing through which the bands of threads are passed edges

wise, and again similarly divided by the oscillating or vibratory action of the comb-bar, and laid over the tension roller at the right-hand end of the machine, in a proper state to be received and wound upon the warp-beam, ready for the operation of drawing in, after which operation it is taken to the loom and woven.

The warp in the last state described is received by the scissor.

THE MACHINERY OF THE EXHIBITION.

We shall not do more than direct attention to the numerous power-looms exhibited, to the Jacquard loom, and to the machines for making the *hanks* or heddles—for making reeds, for cutting cards, and for making other appendages to weaving machinery. Weaving in almost every fibre—cotton, flax, silk, worsted, and wool—may be learned in the department of Machinery in Motion.

We must suppose our readers already acquainted with the process of weaving by the hand-loom. Nor can we enter into the description we intended to have done of *Pattern-weaving*, from the simple but effective "shot" patterns—the stripes and checks, the twills and all its varieties—as dimities, dornocks, bombasens, satins, kersaymeres, &c., to the more complicated, embracing damasks and brocaded silks. By means of the *Draw-loom*, the order in which the warp threads are depressed or elevated, varies continually; strings being so arranged that the *Draw-boy* can draw down the requisite warp threads preparatory to the movement of the shuttle. The warp threads pass through the eyes or loops in vertical strings, each thread having one string, and these strings are so grouped that the attendant boy, by pulling a handle, draws up all those warp threads which are required to be elevated for one particular shoot of weft; and when a different order of succession is required, he pulls another handle. Hence it follows that the arrangement of the strings and handles must be preconcerted with especial reference to one particular pattern, and this is called "cording the loom." The *cording* used to occupy a skilful thoughtful man several months, and would then of course serve for only one particular pattern.

The first step in improving the *draw-loom* was the substitution of mechanism for the handle and boy called a *draw-boy*, and then the adoption of Duncan's automatic carpet loom or barrel loom, in which pins inserted in a rotatory barrel, like an organ barrel, moved a reciprocating lever, as in the *draw-boy*, and thus the way was paved for Jacquard's most perfect invention in 1800.

In all the kinds of weaving hitherto noticed, whether of plain goods, figured goods, bobbin net, stockings, or other fabrics, we have alluded to the weaving machine as *worked by hand*—or, more correctly speaking, by hand and foot—for the treadle is invariably the receiver of power in these machines.

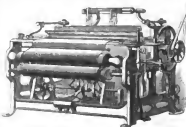
So early as 1678 M. de Gennev invented "a new engine to make linen cloth without the aid of an artiferer," and at various times during the last century, M. Vaucanson, Mr. Austin, and Mr. Miller, contrived looms which were to be worked by a winch, by water power, or some power extraneous to the common hand loom.

As Arkwright's and Watt's inventions were perfected and

looms had not produced important saving in the expense of weaving, as a man had to be employed about each loom.

The power-loom of the present day is one of the most remarkable machines of the age we live in.

Mr. Harrison exhibits a power-loom made in 1798 or 1800



[it is engraved on the preceding column] alongside of the most improved loom of the present day, engraved on this column. How great the difference! Yet the honour due to Robert Miller, who commenced to introduce power-looms of the same construction as this old loom in 1796, is perhaps greater than to those who have produced the improvements, because his was the *beginning*.

The old machine can be worked to advantage at 60 picks per minute, requiring one person to each loom, or five persons to six looms. The new looms can be driven at 220 picks per minute, and are to be seen working at that speed in the Exhibition, and in all the best power-loom mills in England and Scotland. One person can attend two of these, and in many instances three looms.

An experienced operative of the manufacturing district, working the modern looms, produces 26 pieces of printing cloth, 25 inches wide, 29 yards long, and 11 picks per inch, in a week of 60 hours. The cost of weaving each piece is 5*s*. 6*d*.

less than 6*s*.! If the same cloth were woven on the old loom, one operative would produce only four pieces, and at a cost of 2*s*. 6*d*. each; or the weaver's wages in 1800 were as much as is the entire value of the cloth in the Manchester market at present. Wonderful mechanical result! What are the moral results?



extended in their applications, the necessity for having weaving machinery became more urgent. In 1802 the power-





AN ESSAY ON ORNAMENTAL ART AS DISPLAYED IN THE INDUSTRIAL EXHIBITION IN HYDE PARK, IN WHICH THE DIFFERENT SYSTEMS ARE COMPARED WITH A VIEW TO THE IMPROVEMENT OF TASTE IN HOUSE MANUFACTURES.*

BY RALPH NICHOLSON WORMUM.

"It is known that the Taste is improved exactly as we improve our judgment; by extending our knowledge by a steady attention to our object, and by frequent exercise. They who have not taste thus cultivated, if their taste decides wrongly, it is always ignorantly; and their endeavour is owing to their presumption and fashion, and not to any rational foundation."
—BACON.

* Continued from *Graville*.

I.—Introduction.



THERE is perhaps no province of industry, in which the advantages of an intercommunication of ideas are more direct, than in that of Art-manufacture; and this must be more especially the case when the means of production of the various parties are pretty nearly mechanically equal. The differences of results arise purely from differences of degrees of artistic skill, depending on the greater or less cultivation of those faculties of the mind which conduce to that species of judgment termed Taste.

It is evident that Taste must be the paramount agent in all competitions involving ornamental design, where the means or methods of production are equally advanced; but where this is not the case, the chances are still very greatly in the favour of Taste over mere mechanical facility, provided low price be not the primary object.

Thus, the Great Exhibition in Hyde Park is of all things the best calculated to advance our National Taste, by bringing in close contiguity the various productions of nearly all the nations of the earth in any way distinguished for ornamental manufactures. The

distinctive characteristics of each are so many elements of novelty of arrangements which every nation may appropriate according to its own views and practices.

Our present subject of consideration is how far British manufacturers may derive advantage from this congress of national peculiarities of design.

Ornament is essentially of the province of the eye; it is beautiful appearance that we require, not *promissive* ideas, in works of Ornamental Art; these may be associated with ornament, but they must be kept perfectly subject to the mere principles of beauty of arrangement of the material forms. Dramatic, allegoric, and ornamental art are totally distinct in their development; they may be combined, but one can never be the substitute of another. If dramatic or allegorical compositions are introduced as portions of an ornamental scheme, they must be treated upon the symmetrical or ornamental principle. Whatever other principle we may associate with the ornamental, must be kept secondary to effect, if we are desirous of making a good design: introduce what symbols we will, they must be made subject to the ruling principles of ornament itself, or, however good the symbolism, our design is a mere curiosity in Art.

Some general examination of ornament in its characteristic developments of various times and nations, or what are technically called *styles*, must necessarily precede our examination of the modern expressions of ornamental art as now displayed in the Great Industrial Exhibition.

We shall find that the elements of form are constant in all cases; they are but variously treated: this, in fact, must be so, if a Style be founded upon any principles at all; and all those styles which have carried with them the feelings of age, could not be otherwise than based upon some fixed natural laws. How certain variations of form and colour happen to be so universal a desire, that the varieties of their arrangements have occupied all people from the remotest times, is a question of both material and psychological interest.

Universal efforts show a universal want, and beauty of effect and decoration are no more a luxury in a civilized state of society than warmth or clothing are a luxury to any state; the mind, as the body, makes everything necessary that it is capable of permanently enjoying. Ornament is one of the mind's necessities, which it gratifies by means of the eye. So it has been discovered to be again an essential element in commercial prosperity. This was not so at first, because in a less cultivated state we are quite satisfied with the gratification of our merely physical wants; but in an advanced state, the more extensive wants of the mind demand still more pressingly to be satisfied. Hence ornament is now as material an interest in a commercial community as the raw materials of manufacture themselves.

In early stages of manufactures, it is mechanical fitness that is the object of competition; as society advances, it is necessary to combine elegance with fitness; and those who cannot see this must send their wares to the vulgar markets of the world, and resign the great markets of commerce to those of superior taste who deserve a higher reward.

This is no new idea: let us take a lesson from the experience of past ages,—the various coloured glass of Egypt, the figured cups of Sidon, the shawls of Mileta, the terra-cottas of Samos, the bronzes of Corinth—did not command the markets of the ancient world, either for their materials or for their mechanical qualities; not because they were well blown—cleverly chased—finely worked—ingeniously turned—or perfectly cut—these qualities they had only in common with the similar wares of other nations; but it is the gratification of one of the most urgent necessities of the mind in an advanced social state, they were pre-eminent—they were objects of a cultivated refined taste. And it is by this character alone that manufactures will ever establish that renown which will ensure a lasting market in the civilized world. The great object of attainment in Taste, which is not a mere impulse of the fancy, but dependent upon the operations of reason as completely as any other conclusion respecting good or bad, or right or wrong, to which we attain by the mind's experience. To demonstrate this truth is the chief aim of the following Essay, in which the various species of ornamental art exhibited will be examined with respect

* To this Essay has been awarded the prize of ten hundred guineas, offered by the Proprietors of the *Art-Journal*, for "An Essay on the best mode of rendering the Exhibition of the Works of Industry of All Nations, to be held in London in 1851, particularly useful to the British Manufacturer."—*See*, A. 2.

THE EXHIBITION AS A LESSON IN TASTE.

to their quality, wholly regardless of magnitude or quantity; for a single good work is worth a whole museum of mediocrity, in an educational point of view, and this is the bourn of our inquiry—How far our manufacturers may improve their taste through the present Great Exhibition of Works of Industry now established in Hyde Park?

It is only by an analysis of the principles and styles of ornament that such an inquiry can be practicable, and only by testing the works exhibited by these principles that any sound or useful conclusions can be drawn.

II.—The Styles.

Style in ornament is analogous to hand in writing, and this is its literal significance. As every individual has some peculiarity in his mode of writing, so every age or nation has been distinguished in its ornamental expression by a certain individuality of taste, either original or borrowed. In a review of this kind, however, when we speak of the styles, we can comprise only the broad distinctions of ornament itself, the kinds or genera, not the more specific varieties. There are, of course, many varieties of every great style; but so long as the chief characteristics remain unchanged, the style is the same. From this point of view, therefore, the styles become comparatively few. We shall find that nine will comprise the whole number of the great characteristic developments which have had any influence on European civilisation: namely—three ancient, the Egyptian, the Greek, and the Roman; three middle-age, the Byzantine, the Saracenic, and the Gothic; and three modern, the Renaissance, the Cinquecento, and the Louis Quatorze.

All styles are only so many different ways of using the same language, that of ornament; some expressing one sentiment, some another: the various expressions do not depend so much upon the details themselves as upon their mode of treatment. In the Egyptian, the earliest historic style, we have the conventional and the symbolic elements paramount, in a simple symmetrical treatment, combined with a very positive expression of colour.

The Egyptian is literally a hieroglyphic style; as a rule the Egyptian elements have a particular meaning, even to the geometrical patterns: few, if any, are arbitrarily chosen for the sake of beauty of effect only; the style is accordingly very simple and limited in comparison with later styles, in which mere symbolism was superseded by the pure principles of Art.

But many Egyptian ornaments are still popular ornaments, and have been so through all times; as the lotus or labyrinth, wave-scroll, spiral, zigzag, water-lily, the palm, and the star. The arrangements are almost exclusively a more symmetrical progression, and always of a very simple order, though of gorgeous character; far precious stones and metals, and the richest materials generally, seem to have been abundantly used. The frieze is the commonest form of these decorations, and the details are generally some of the more important symbols; as the Lotus or water-lily of the Nile, the type of its inundations, from which Egypt derives its fruitfulness; and the zigzag, the type of water itself.* The Winged Globe, however, or the Scarabæus (the Beetle) is the most prominent of all Egyptian ornaments; it was a species of talisman, an invocation of the good spirit, *Apothéosis*, and was used universally as both architectural and personal ornament, in almost every kind of material, wood, metal, or stone; from the largest block of granite of Syene to the diminutive proportions of the rarest precious stones. The Aep, and the cartouches containing hieroglyphs, are other important materials of Egyptian ornament.

We find mixed up with these more characteristic details almost every natural production of Egypt, conventionally treated; not mere crude imitations from nature, but natural types, selected by symbolism, and fashioned by symmetry into ornamental decorations.

In viewing the character of Egyptian Art, then, besides its conventionalism and symbolism, which are expressions of details, we have a general expression—namely, its grandeur of proportion, simplicity of parts, and splendour or coarseness of material: gold, silver, and ivory, precious stones, and colour. Its great prevailing characteristic, like that of all Oriental Art, is sumptuousness.

* This sacred significance of the zigzag is still preserved in the Indian sign of the Water-carrier or *Agastya*.

Jewish and other Asiatic ornament, like the Egyptian, appears to have been purely representative; the only elements mentioned in scripture, are the almond, the pomegranate, the palm-tree, the lily or lotus, oxen, lions, and the cherubim.*

It is not till we come to Greece that we find the habitual introduction of forms for their own sake, purely as ornaments, and this is a very great step in art. The Egyptians produced many beautiful useful forms, but the Greeks not only improved these forms, but decorated them with appropriate and beautiful ornaments, designed solely for their effect as delightful objects to the eye; they paid the same attention to architectural and general decoration.

If we consider the Greek as one great historic period of ornament, the following are its chief characteristics, with some of which Egypt has already made us acquainted:—the fret, the wave-scroll, sometimes called the Vitruvian scroll, the echinus, or horse-chestnut (vulgarily called the egg and tongue, and egg and dart), the astragal, the anthemion (commonly called the Greek honey-suckle, because some examples resemble that flower), the guilloché or plat, and the volute: the ordinary scroll and the acanthus are very partially developed in the pure Greek, compared with what they were in later times among the Romans; they both belong, nevertheless, to Greek Art, especially the acanthus which distinguishes the last and richest of the Greek orders—the Corinthian. These three orders, as regards their ornamental qualities, are better described as the *Echinus*—the *Volute*—and the *Acanthus*—Orders, than by their national designations. They are not so much distinct as successive orders, each adding something to that which preceded it; for instance in the Doric, or early Greek order, we have the echinus as the only ornament; in early times it was painted, in later it was cut on the capital; in the Ionic, or second Greek order, we have the addition of the volute, or ram's horn, to the echinus; and in the third order, or the Corinthian, we have the addition of a row of acanthus leaves below the volute, of the second order, but which are here modified into stems, or *ovoids*. How all these various Greek elements were treated it is not expedient to explain here; again, precluding it if nothing else, but there is always a great simplicity both in the details and in the arrangement of the materials of Greek ornament; it is generally the various elements arranged in simple horizontal series, one row above another.

In the Roman, the third and last ancient style, we have, as the chief characteristic, a gorgeous magnificence; but this magnificence was accomplished only by an enrichment and a profuse use of Greek details; the scroll and the acanthus, however, being predominant over all others, so much so, that the acanthus scroll alone when in anything approaching magnificence of development, is sufficient to stamp a design as Roman in character, and it is the chief distinction between Greek and Roman work.

The Romans used the Greek orders, but they added to them one of their own, which is, however, a simple mixture of the three Greek orders into one—an echino-related-antenna order; the original modification of the volutes in the Corinthian acanthus order being restored to a complete Ionic capital in the Roman. Besides this great richness of detail, the mixture of grotesques such as human, animal, and vegetable forms combined, is a common characteristic of Roman Art, as, for instance, the sphinx, griffin and others; these elements were likewise Greek, but not of such frequent occurrence in Greek examples:† the Roman, in fact, added no element, except perhaps the shell, to the materials of Greek ornament.

With the Roman ends what may be technically termed ancient ornament; the change of religion which ensued, through the adoption of Christianity by Constantine, totally revolutionised Ornament, as well as all other Art.

During the first and second centuries, Christian works of Art were limited to symbolic, and were then never applied as decorations, but as exhortations to faith and piety. And all Christian decoration rests upon this foundation; the same spirit of symbolism

* See the visions of Ezekiel, I and II, from which are derived the four symbolic images of the Evangelists—the angel, the lion, the ox, and the eagle.
† The sphinx was also Egyptian, but there is a great difference between the Greek and Egyptian sphinxes. The first is human-headed, lion-bodied, and horn-headed, and is always male; while the Greek is female, with the head of a woman, and always has wings, which the Egyptian never has. See Mr. Dawson Wilkins's account of the sphinxes.—*Monuments and Customs of the Ancient Egyptians*, &c.

THE EXHIBITION AS A LESSON IN TASTE.

prevailing throughout, until the return to the heathen principle of beauty in the period of the Renaissance.

The early symbols were the monogram of Christ, variously written—the *lyl*—the cross—the serpent—the *ancre*, or *serpent*—representing the accretion symbol, the fish, from the common Greek word for fish—*ixthys*, containing the initials of the following sentences—*Jesus pascitur fidei semper*, Jesus Christ, of God, the son, the Saviour; and the circle or *mandorla*, the glory of the head, as the *serpent* is of the entire body. These are all very important elements in Christian decoration, especially the *mandorla*, which is the element of the trefoil and quatrefoil and analogous forms, so common in Byzantine and Gothic Art; the trefoil having reference to the Trinity; and the quatrefoil to the four evangelists, as the testimony of Christ; and to the cross, at the extremities of which we often find the circle, beside the circle or *mandorla* in the centre, signifying the Lord: the circles at the extremities, which are the *mandorla* of the evangelists, often contain their respective symbolic images, the angel, the lion, the ox, and the eagle; thus making their significance palpable.

Why the beautiful and accomplished styles of the ancients, then, were discarded for such comparatively crude elements of ornament, needs no other explanation than that they were pagan. Paganism consisted, however, solely in form, not in colour, and therefore in respect of colour there were no restrictions. But ancient forms also, as paganism itself gradually disappeared, were slowly admitted among the elements of Christian decoration; and the scroll, under certain modifications, became eventually a very prominent figure in Byzantine ornaments; and under a similar modification, the anthemion and every other ancient form was gradually adopted after a systematic exclusion of four or five centuries.

But all Byzantine decorations are strictly conventional, a trefoil leaf or a *lyl* form being the ordinary foliage for a scroll; and every form, whether from nature or from earlier styles of Art, was always treated in a positive manner; mere skill, on the whole, being displayed in the general effects than in the details, and owing to the richness of material used, which was characteristic of Byzantine taste, a very gorgeous style was ultimately developed upon the mere foundation of a rude symbolism.

The leading forms of Byzantine or Romanesque architecture are likewise due to the same influence; the cross, the circle, and the dome pervade everywhere. Both the Lombard and the Norman styles may be considered as mere varieties of the Byzantine. All are comprised in the term Romanesque, which comprehends the round-arch style of Middle-Age Art, as distinguished from the Saracenic and the Gothic, which are pointed-arch species.

Indeed the Byzantine was so widely spread and so thoroughly identified with all Middle-Age Art, after the first few centuries of the Christian era, that its influence even in Italy did not wholly decline before the fifteenth century, until the establishment of the *Quattrocento*, by Lorenzo Ghiberti. Both the Saracenic and the Gothic proceeded from the Byzantine. The Greek missionaries carried its influence into the extreme north; and while the artists of Syria were accommodating their style to Mohammedan exclusiveness in the south, in the colder regions of Europe the mysteries of Mount Athos were freely mixed up with the fables of Scandinavian mythology. The Scandinavian soldiers, also, of the imperial body-guard at Constantinople, made, on their return, the talismans of Christian mythology almost as familiar in their native homes, as the gods of their forefathers. The cross placed on the serpent is not an uncommon image on Mount Athos; and the cross surrounded by the so-called *Isenic knot*, is only a Scandinavian version of the original Byzantine symbol of the redemption—the crushed snake curling round the stem of the avenging cross. The same mixture of Christian and Northern mythology characterises the portals of Lombardy.

As the peculiarly Norman style, such as it is best known in this country, was originally developed in Sicily, it contains many Saracenic features, of which the pointed arch and the zigzag are the most characteristic. The original Norman was not national, but simply Romanesque or Byzantine; and the decorated or pointed zigzag Norman is, strictly speaking, Sicilo-Norman; there is no other peculiar Norman style.

The principles of the Saracenic are soon stated: the conditions

of the new Mohammedan law were stringent; there was to be no image of a living thing, vegetable or animal. Such conditions led of course to a very individual style of decoration, for vegetable forms were now excluded for the first time. However, by the eighth century, when the richer works of the Saracenic commenced, the Byzantine Greeks who were pressed into the service of the Arabian Caliphs and generals, were already sufficiently skilful to make light of such exclusions, and the exertion of ingenuity which they impelled gave rise to, perhaps, a more beautiful simply ornamental style than any that had preceded it, for there was no division of the artistic mind now, between meaning and effect; and although the religious cycles and other symbolic figures, which had hitherto engrossed so much of the artist's attention were excluded, the mere conventional ornamental symbolism, the ordinary forms borrowed from the Classic period, and geometry, left an abundant field behind, which was further enriched by the peculiarly Saracenic custom of elaborating inscriptions into the designs. Mere curves and angles or interlacings were now to bear the chief burden of a design; the curves, however, very naturally fell into the standard forms and fixed shapes; and the lines and angles were soon developed into a very characteristic species of tracery or interlaced strap-work, very agreeably diversified by the ornamental introduction of the inscriptions. The Saracenic was the period of gorgeous diapers; but like the Byzantine, it was more remarkable for its general effects than for any peculiar merit of the detail, or of its combinations—it is made up of an infinite number of minute contrasts of light and shade and colour; something like a formal flower-garden, wanting the simplicity and grandeur of natural scenery. But no details are so applicable for mere *fillings* as the Saracenic, and hence we find them constantly occurring in the designs of the Renaissance.

The last great middle-age style the Gothic, like the Saracenic, grew out of the Byzantine; it flourished chiefly on the Rhine, in the north of France, and England; it was developed in the thirteenth century, was perfected in the fourteenth, and in the sixteenth became extinct.

The Gothic is essentially a pointed and geometrical style in its general form, though all the symbolic elements of the Byzantine are preserved in it; its details appear to be an infinite repetition of its greater architectural features, by which it is distinguished; as the spire in the place of the dome, and the pointed, in the place of the round arch, compared with the Byzantine or Romanesque. The pointed arch, however, it has only in common with the Saracenic and the Sicilo-Norman.

As an ornamental style, it is an excessive elaboration of the pointed and geometric element, vertical and diagonal lines prevailing over the others. It is further peculiar in its combinations of details, at first the conventional and symbolic prevailing, and afterwards these combined with the elaboration of natural objects proper to its localities. We find in Gothic examples, not only the traditional conventional types, but also in the later periods, mixed with them, exact imitations of the plants and flowers growing in the neighbourhood. This is a great feature, but still always secondary to its elaboration of geometrical tracery—*voicées*, *trefoils*, *quatrefoils*, &c., with many other geometrical combinations,—which always remains the main characteristic of the style, whether the so-called early English, the decorated or the perpendicular, French or German.

In ornament, therefore, as in architecture, it is the geometrical tracery which stamps a design with a Gothic character; mixed with natural flowers only, it is still Gothic; but the example is more characteristic when it contains also the historic ornaments of the style—as the Tudor-flower, the fleur-de-lis, the crocket-leaf, trefoil-leaf, vine-scroll, and other familiar details. The Gothic scroll always preserves the character of its early Byzantine type, namely that of a foliated serpentine rather than a succession of spirals.

The *Renaissance* or *Rinascimento*, as the ultimate revival of classical art in Italy is termed, dates from about the Venetian conquest of Constantinople, in the year 1504. This revival, best known under its French name of the *Renaissance*, was long strictly but a revival of the classical orders of architecture; there was no revival of classical ornament itself in its completeness before the

sixteenth century, until the style known as the *Cinquecento*,* the real goal of the Renaissance. There are four distinct varieties of the Renaissance, independent of the Cinquecento. Its earliest character, the *Trecento*,† in the fourteenth century, is chiefly a mixture of Venetian and Sicilo-Norman ornament, the Venetian being purely Byzantine in its origin, consisting for the most part of conventional foliage and scroll forms, such as the decorations by Giotto in the church of San Francesco at Assisi, or the mosaic of the Baptistery of San Giovanni at Florence.

In the fifteenth century, or in the *Quattrocento*, the influence of tradition was wholly superseded by selection, and a gradual recurrence to ancient examples; with a mixture of original arbitrary forms and natural imitations. The introduction of exact natural imitations was the great feature of this new stage of the Renaissance, as displayed by Lorenzo Ghiberti at Florence, in his magnificent gates of the Baptistery of San Giovanni.‡ Still all details were ornamentally treated, strictly in accordance with the laws of symmetry in their arrangement. It was in this period that were gradually introduced also those peculiar arbitrary forms, pierced and scrolled shields, or cartouches, and tracery, or strap-work, which eventually became the most characteristic details of the styles of the Renaissance, except during the short period of the prevalence of the Cinquecento in the earlier half of the sixteenth century, when they were very generally discarded, as was every element not found in ancient examples.

A design containing all the elements indiscriminately, can be designated only by the vague term Renaissance; and such a design may contain the classical orders and ornaments combined with conventional Byzantine scroll-work, Moorish tracery and interlacings, scrolled shields, foliage, tracery, and strap-work, natural imitations of animal or vegetable forms of every description, and the grotesque arabesques. Such is the mixture we find in the works of Benvenuto Cellini, and also in the great majority of the foreign cabinet and silver-work in the Exhibition.

This peculiar style flourished in the sixteenth century, simultaneously with the more definite Cinquecento, which was, in fact, an attempt at purification of style by the great artists of that period, who excluded every element not warranted by ancient examples, and accordingly in this style, which must be considered as distinct from the ordinary Renaissance, we have an endeavour to restore ancient ornament to its original purity and splendour, and even to develop it to a still greater degree of variety, and a more chaste magnificence, than is exhibited by ancient examples.

The Cinquecento, therefore, is a critical distinction of styles, does not imply merely sixteenth century Art, but a particular art of the sixteenth century. The term Renaissance is sufficiently definite for the mixed style, more especially as this style belongs to several ages and countries, though more peculiarly to France, where it has prevailed almost to the exclusion of every other style; but it is of strict Italian origin. There are, accordingly, four Italian styles of the revival—the *Trecento*, the *Quattrocento*, the pure *Cinquecento*, and the mixed *Cinquecento*, or Renaissance; there is one French style of the period—the Renaissance, the same as the mixed *Cinquecento* of Italy; and there is one English style—the Elizabethan, which is the English Renaissance: minor modifications it is unnecessary to notice here. We have made this summary enumeration for the sake of defining the Cinquecento itself, as practised by Augustine Bussi, and others, more particularly in the north of Italy, towards the middle of the sixteenth century; the school of Julio Romano, at Mantua, developed it in painting.

The prevailing spirit of this style, aiming at a revival of the gorgeous decorations of Rome, naturally threw out all those peculiar arbitrary forms, which are never found in ancient examples, as the scrolled shields and tracery; and, on the other hand, elaborated to the utmost the most conspicuous characteristics

of Greek and Roman Art, especially the acanthus scroll, and the grotesque arabesques, abounding with monstrous combinations of human, animal, and vegetable forms, in the same figure or scroll-work; but always characterised, whatever the materials, by an extreme beauty of line; every natural form, and every conventional or ornamental form of antiquity, is admissible in the pure Cinquecento; it has also this feature, a beautiful variation of ancient standard types, as the Antennæ, &c., which occur not only as we find them in ancient examples, but as Italian plants also, treated in the order of the ancient examples.

The Cinquecento is considered the culminating style in Ornamental Art, as presenting the most perfect forms, and the most pleasing varieties; Nature and Art vying with each other in their efforts to attract and gratify the eye. It appeals only to the sense of beauty; all its efforts are directly made to attain the most attractive effects, without any intent to lead the mind to an ulterior end, as is the case with the Byzantine and other symbolic styles. The Cinquecento forms are supposed to be symbols of beauty only, and it is a remarkable concession to the ancients that the moderns, to attain this result, were compelled to recur to their works. And it is only now, in the contemplation of this consummate style, that the term "Renaissance" becomes quite intelligible. The Renaissance, or Re-birth, of ornament is accomplished in the Cinquecento; still the term is not altogether ill-appropriated to the earlier styles, as these were really the stepping-stones to the Cinquecento. We now come to the consideration of the last of the historic styles—the Louis Quatorze with its variety, the Louis Quinze, and its final debasement, the Rococo.

The great medium of the Louis Quatorze was gilt stucco-work, which for a while seemed to have almost wholly superseded decorative painting; and this absence of colour in the principal decorations of the period seems to have led to its more striking characteristic, infinite play of light and shade. Such being the aim of the style, exact symmetry in the parts was no longer essential, and accordingly in the Louis Quatorze varieties, we, for the first time, occasionally find symmetry systematically avoided. This feature was gradually more and more developed until it became characteristic in the Louis Quinze, and ultimately led to that debased style, or rather variety, the Rococo, in which symmetry either in the balance of the whole, or in the details of the parts, seems to have been quite out of place.

The characteristic details of this style are the scroll and shell; the anthemion treated as a shell by being made concave, and a small acanthus scroll; it is a variation of the most common decoration of the ancient funeral tiles; all classical ornaments are admitted in the Louis Quatorze, but they are confined to the mere accessory details; all elements of the Cinquecento also from which the Louis Quatorze proceeded, are admissible under peculiar treatment, or as accessories to the scroll and shell as principal features: the very panels are formed by chains of scrolls, the concave and convex alternately, some clothed with an acanthus foliation, others plain. A fiddle-shape combination of such scrolls is very characteristic even for various purposes; a legacy probably of the ordinary Renaissance.

The broad acanthus foliations of the scroll in the Louis Quatorze, became much elongated, resembling more commonly the flag-leaf, in the Louis Quinze.

As long as these various elements were treated symmetrically, and with attention to the masses, good effects were not uncommon, but when, in the time of Louis Quinze, symmetry was wholly disregarded, and the acanthus scrolls degenerated into the *equivallée*, a species of crimped conventional shell-work, the designs became a mere mass of vagaries of indescribable forms, and the Rococo was displayed in the perfection of the bizarre in ornament. The play of light and shade is so essentially the element of the Louis Quatorze styles, that every other motive yields to it; and it is carried out to such an extent that they scarcely admit of a flat surface in their details; all are either convex or concave, and hence also the prevalence of the wave-line in their general forms. This constant varying of the surface gives every point of view its high lights and contrasts, and for this reason stucco has so many bold decorations in the flat and gaudy colour in all characteristic Louis Quatorze and Louis Quinze designs. But the more general aim of these styles

* From its time, that is after the year 1500, or in the sixteenth century, the word *sculpture* is understood, the full expression being *sculpture cinquième*, one thousand five hundred, governed by analogy into *Cinquecento*, or five hundred. The expression *Trecento* and *Quattrocento* admit of a similar explanation, referring to fourteenth and fifteenth century Art respectively.

† The German interlacing of stems and leaves, so prevalent of late, and known as the *Keltic style*, is perfectly analogous to grotesque with many examples of the twelfth, though it really (as the name implies) is Celtic.

‡ There are several bronze copies of these gates in the Exhibition, exhibited by M. Desbordes de Paris.

gradually led to so great a neglect of the details, that eventually all individuality was lost, and with it all study: hence, in the absurd Rococo, the very natural result of this general neglect, we have designs made up of details so without meaning and individuality as to defy description.

Such is a review of the great Hietor style of ornament, and, having thus defined the peculiar distinctions of the style, we may now examine in detail the various objects exposed in the Exhibition, with a view—by critical comparison—to draw what lessons we may from this great industrial competition of nations.

III.—The Exhibition.

Once the overwhelming impression of admiration and wonder at the unparalleled collection, and the admirable arrangement of the whole, subdued, the inquisitive mind naturally turns its attention to the details in the mass, and in classes more or less defensible according to its own objects and pursuit. In our instance, the mind intent on Art-manufacture, naturally turned its attention only upon such objects as were of an ornamental character. The first general impression is one of bewildering magnificence and endless wealth; as the particular classes are gradually separated in the mind, a process of comparison commences between the objects before the eyes and the vague anticipations of the mind previous to entering the building, with results more or less satisfactory according to individual knowledge and experience.

Definite ideas now arise in the mind, of dissatisfaction or approval as it may be, at the various impressions from the different departments, and then the operation of criticism in detail commences, followed by individual comparisons of the relative display of the various countries.

In examining minutely the results of these last operations, the following are the conclusions we must draw from them:—

That there is nothing new in the Exhibition in ornamental design; not a scheme, not a detail that has not been treated over and over again in ages that are gone; that the taste of the producers generally is uneducated, and that in nearly all cases where this is not so, the influence of France is paramount in the European productions; bearing exclusively in the two most popular traditional styles of that country—the Renaissance and the Louis Quinze—with more or less variation in the treatment and detail. There are few designs of any country that do not come within the range of these two styles—from the Italian Renaissance to the French Rococo, or debased Louis Quinze. The few Greek, or so-called Etruscan specimens, and the Gothic examples, in the singularly styled Medival Court, are almost the only exceptions as regards European design. The best understood style is that which we have been obliged to designate the mixed Cinquecento or Renaissance; the apparently most able designers of Italy, France, Austria, Belgium, and England, have selected this style for the exhibition of their skill; if, therefore, the Exhibition can be considered as a test of the favorite style of the day, it is evidently the Cinquecento Renaissance, or the style which was developed in the second half of the sixteenth century in Italy. The Louis Quatorze varieties perhaps prevail in quantity, the Louis Quinze, and the Rococo; the Gothic is evidently in little requisition in foreign countries, and is only very partially cultivated in this, as is evident from the very small number of exhibitors who have contributed to what is very strangely misnamed the Medival Court, as if the Gothic were the only medieval style, or even the medieval style *par excellence*. The Renaissance, Byzantine, and Baroque, and several Italian varieties, were infinitely more extensive in their influence in the middle ages than the Gothic, which was almost limited to the neighbourhood of the Rhine and bordering countries, and it endured only for a comparatively short period, and in point of time scarcely belongs to the middle ages at all, as it was not completely developed until the fourteenth century, and was contemporary only with the Renaissance styles of Italy, which, however, nearly everywhere superseded it in the sixteenth century.

With regard to classical or Greek and Roman ornament, it is astonishing to find so little of it. The taste so active fifty years ago, in this country at least, appears to have spread no further than its original promoters could extend it; in furniture it

is scarcely represented, and in pottery it is still seemingly the great prerogative of Messrs. Wedgwood to exhibit pure specimens of the Greek style; and still for the most part in the exquisite productions of Flaxman, which appear more beautiful than ever, surrounded as they are by such endless specimens of the prevailing gorgeous taste of the present day, which gives the eye no resting-place, and presents no idea to the mind, from the want of individuality in its purged designs.

The stall of Messrs. Batten* is devoted to the so-called, Etruscan taste, but so exclusively in one class of fabric, uniform in character and material, that it conveys only the notion of copying a design, not the revival of a simple and pure taste. The mere red and black are not essentials of the taste, but accidents of material; the materials further might be applied to modern uses, and the ancient forms and ideas expressed in other materials; this would be adopting a taste, a very different thing from merely copying designs.

The Medival Court is open to much the same objection, though not so entirely so. We have in this collection not an evidence of the application of a peculiar taste to modern and ordinary wants or purposes, but simply the copy of an old idea; old things in an old taste. Byzantine or Gothic symbolism, in as far as they generate beautiful forms, may claim our admiration, and Mr. Crane's table in inlaid wood shows that such a result is quite possible out of such materials. But where the thing is made not for its own sake or the use it may be of, but purely as an embodiment of the old hygiene idea that originally moved it, it is only a cowl to smother all independent original thought or ingenuity, and by preserving symbolism as principal in all efforts would reduce Art much to what we find it in India, or rather China. Indeed, except in the most obvious forms of repetition, this court already presents a striking similarity of taste to that of the Indian works, in its rude undefined details, and in richness of material; as in the stuffs and carpet exhibited by Mr. Crane; in the wood-carving of Mr. Myer; and in the ecclesiastical vessels and robes exhibited by Mr. Hardman; all showing the strong analogy with the Oriental types, and the Byzantine origin of the style. This is the fact however which explains the similarity of the two developments, their common source, the Byzantine symbolism; the triangles, trefles, squares, and quatrefoils and various Romanesque adaptations of the old Byzantine Greeks: spread on one side by the Christians of the west, the Latins, and on the other by the Mohammedans of the east, the Arabs. Much scroll-work in Indian and Gothic is identical; and the Byzantine standard, the basis of plenty, have given rise to a very similar treatment on both sides.

As individual designs, however, this court offers some very fine samples of Gothic, as the mantelpiece by Myer, with the clever adaptation of the dove and olive as a crocket†.

Such being the relative proportion of the styles, what is the general conclusion that we are to draw from this evidence? We have ventured to assert, that the best specimens of ornamental design as a class, are of the Renaissance, but that the great bulk of the specimens are of the Louis Quatorze varieties; that Classical Art is scarcely represented, and that the Gothic, is only very partially so. Setting aside the Gothic, which owes what we have of it to sentiments distinct from ornament, we have only three decided expressions of taste, the Greek, the Italian, and the French, or the Classical, the Renaissance, and the Louis Quinze. These three tastes are very distinct; we have in the first a thoroughly well understood detail, with a highly systematic and symmetrical disposition of these details, always arranging them upon such forms and at such intervals as shall fairly display the article and its ornaments in due proportion; in fact a faultless taste; in the second, in the Renaissance, we have also a well understood detail, but a prevalence of the bizarre, and a love of profusion of parts; great skill of execution, but upon the whole a bewildering and fantastic effect, still one more agreeable to the generality than the simple purity of the Greeks; in the third taste, that best illustrated by the Louis Quinze, in every variety, we have a total disregard of detail, therefore exclusively a general effect; individuality of parts, beauty of execution, anything that can possibly display any merit in itself as interfering with a purely general effect, is not only

* See Cat. p. 367.

† See specimens reg. pp. 357–360.

THE EXHIBITION AS A LESSON IN TASTE.

superfluous but detrimental to the design, which aims only at a gorgeous effect as a whole. We have in this last essentially a superficial style aiming at a glittering or attractive display; hence it is best exhibited in gilt-work or silver, or where there is at least a uniformity of colour; reflection, or more play of light and shade being its element. The very nature of this style offers a premium to the neglect of detail; those practising it therefore soon neglect everything of the kind, and thus the whole province of ornament is degraded, and where such a style prevails the permanent impression conveyed to the critical mind must be a general want of education in taste, just such an impression as the Great Exhibition gives at this moment.

Now it is not a desirable thing that we should find the best talent of Europe devoted to the taste, having profusion of detail and mere skillfulness of execution as its great characteristic; yet if one style is to be chosen, considering its general nature, no more pleasing one could be adopted: we have both an understood detail, and a general effect at the same time, free from the prevalence of any particular kind of form or lines, which given the Renaissance an infinite superiority as an ornamental style over the Gothic, in which the profusion of vertical and diagonal lines, is the same relation, is fatiguing and repelling to the mind, as is well illustrated by the peculiar assemblage in the so-called medieval court, which stands there as a warning to us against making this style familiar in our dwelling-houses. It is essentially an architectural style, and is applicable only when it can be applied on a great scale, so that the eye does not at once comprise in a small compass its peculiar angularity and formality.

To bring the reader to a more exact comprehension of this prevailing style of the Renaissance, we will instance a few of the principal works exhibited, and which are its best exponents. To commence with Italy, the original arena of the style, there are the plaster mantel-piece by G. Bottinelli, of Milan, and the painted ceiling in the same room by A. Montanari, of Milan; and also the walnut cabinet exhibited by Angelo Barbelli of Florence, but this borders on the pure Cinquecento; among French works, the Fontaine à Tête, silver, exhibited by M. Durand, of Paris; the specimen of room decoration by Cruchet, wood and carton-pierre combined, in the nave; and the magnificent side-board exhibited by Foudrinot, of Vienna; from Stuttgart, a dressing table, and wardrobe by J. F. Wirth, in mahogany, in exquisite taste. From Belgium, a large marble mantel-piece by J. Leclercq of Brussels; of English specimens may be mentioned Her Majesty's cradle by Rogers,* though this specimen also borders closely on the pure Cinquecento; and the table of gold and silver electro-plate, exhibited by Elkington; also the large silver centre-piece in the nave, exhibited by Hunt & Roskell; the walnut bedstead by Rogers and Dear;† a drawing room fire-place by Yates, Haywood & Co., of Rotterdam;‡ and a parian chimney-piece exhibited by Minton and Co.

These works are not mentioned as of extraordinary merit, but as combining with general excellence the most decided expression of this particular style, which, at the present moment, appears to engage the chief attention of the more able designers, whether English or foreign; and many of them are of a character approaching the best Cinquecento taste.

It will be observed, on examination, that cartouches or scrolled shields, and tracery, prevail more or less in all the above-mentioned works; except for these features several of them would be admirable specimens of the Cinquecento in its purity, of which however the Exhibition also affords a few fine specimens, some of which we may mention here for the sake of clearly separating these two styles. Her Majesty's cradle, as already observed, for the general character of its ornaments belongs to this style; as does also the best-case exhibited by Holland & Sons,§ and the sideboards by Leeson, and by Johnstone & Jackson,|| and likewise the bold sideboard in the south gallery, by Henry Hovell, of the Sheffield School of Design,¶ also a grate by Bailly & Son, and

some decoration by Normet. Of more delicate work may be mentioned the crystal vase and dish belonging to Mr. Webb, exhibited by Morel & Co.; a vase in silver, gilt, and enamel, by Hunt & Roskell; a large gilt bronze vase and dish,* adapted from the shield and helmet of Francis I., in the Louvre (both exhibited likewise in bronze), by Villamona of Paris, the last an exquisite and genuine example; and a very beautiful specimen, a cover and dish, in parian, exhibited by Minton & Co.; also a carved frame in walnut by Pietro Giusti, of Siena; and a frieze, an admirable specimen of one development of the mere scroll-work, exhibited by J. Harmer, jun., in sculptured plaster.†

The above specimens are noticed for mere distinction's sake, for they are rather exceptions to, than examples of, a prevailing taste. It remains yet to point out specimens of the third taste alluded to, the Louis Quinze. As a general reference, English silver-work, and carving and gilding, as a whole, will represent this taste, and exhibit it often in its worst shape. The bad effect of the Louis Quinze, however, as mostly displayed, is not so much an inherent defect in the style as it is the fault of treatment of the elements by the designer. Hence we find a wide difference in the merit of two designs of the same style, where the same materials are used, without descending to the Rococo, of which a large mirror frame in Dresden porcelain,‡ exhibited by the Royal Factory at Meissen, is a sufficiently characteristic specimen. Some of the Austrian furniture in Louis Quinze, as are also some of the handsomest chairs in the Exhibition, Austrian, Belgian, and English; and there are some pieces in the same style, as, for instance, one in the Belgian department, heavy Rococo scrolls, with large bulrushes, which belong to the worst examples of ornamental design exhibited.

The Russian mahogany doors are of an intermediate degree between these two extremes. On the English side the style is well illustrated by the sideboards by Gilroy,§ or Hirst & Son, or the glass frame by T. Posenby; or, in its best development, the Louis Quatorze, by the gilt bedstead, by Faudri & Phillips;|| in silver work, by the testimonial to the Marquis of Tweeddale,¶ exhibited by Hunt & Roskell, from a design by A. Brown.

The wide-spread influence of France, therefore, in spite of the most debased taste in design ever tolerated, is one curious picture presented to the mind by this assemblage of the world's industry; and this influence, as the American examples shew, is not even limited to Europe, or the Old World. Another great fact displayed, perhaps unavailing where true education is absent, is the very general mistake that quantity of ornament implies beauty, many objects being an overburden with details as to utterly destroy the general individuality of expression of the object, and even to render it at first doubtful what the object can be.

In the Oriental works, where quantity of detail also is the chief characteristic, it is of a kind so generally unassuming in its details, and harmonious in its effect and treatment, that the impression of quantity itself is the last that is conveyed, though the whole surface may be covered with ornament. The general form or effect of the design is never interfered with; and by the uniform delicacy of the detail, though it may often have no other merit, a vague trail for the most part, it allows only of a general expression, and we have the happy combination of singularity and richness at once.

In comparing the Indian shawls with their European copies, and how purely they are copies is very satisfactorily shown, a most remarkable phenomenon develops itself; that is, that the skilled and educated designer of Europe should devote some of his most elaborate efforts in design to the imitation of the crude patterns of the hereditary weaver of the East. The skillful designer of Paris, London, or Vienna, could produce patterns infinitely more beautiful than the most gorgeous specimens of the East, with half the trouble it costs him to make his spurious Cashmères; but as they could then be no longer mistaken for Cashmères, their highest merit would be lost.

Even the best of Indian specimens the details will not bear looking at; much of the design is put in to fill a space, the whole being generally only an infinite combination of minute portions of different colours, aiming at a purely general effect. The merits of

* Engraved in Cat., p. 185. †

‡ Engraved in Cat., p. 186. §

§ Engraved in Cat., p. 187. ||

¶ Engraved in Cat., p. 188. †

‡ Engraved in Cat., p. 189. §

§ Engraved in Cat., p. 190. ||

¶ Engraved in Cat., p. 191. †

‡ Engraved in Cat., p. 192. §

§ Engraved in Cat., p. 193. ||

¶ Engraved in Cat., p. 194. †

‡ Engraved in Cat., p. 195. §

§ Engraved in Cat., p. 196. ||

¶ Engraved in Cat., p. 197. †

‡ Engraved in Cat., p. 198. §

§ Engraved in Cat., p. 199. ||

¶ Engraved in Cat., p. 200. †

* Engraved in Cat., p. 185. †

‡ Engraved in Cat., p. 186. §

§ Engraved in Cat., p. 187. ||

¶ Engraved in Cat., p. 188. †

‡ Engraved in Cat., p. 189. §

§ Engraved in Cat., p. 190. ||

¶ Engraved in Cat., p. 191. †

‡ Engraved in Cat., p. 192. §

§ Engraved in Cat., p. 193. ||

¶ Engraved in Cat., p. 194. †

‡ Engraved in Cat., p. 195. §

§ Engraved in Cat., p. 196. ||

¶ Engraved in Cat., p. 197. †

‡ Engraved in Cat., p. 198. §

§ Engraved in Cat., p. 199. ||

¶ Engraved in Cat., p. 200. †

* Engraved in Cat., p. 185. †

‡ Engraved in Cat., p. 186. §

§ Engraved in Cat., p. 187. ||

¶ Engraved in Cat., p. 188. †

‡ Engraved in Cat., p. 189. §

§ Engraved in Cat., p. 190. ||

¶ Engraved in Cat., p. 191. †

‡ Engraved in Cat., p. 192. §

§ Engraved in Cat., p. 193. ||

¶ Engraved in Cat., p. 194. †

‡ Engraved in Cat., p. 195. §

§ Engraved in Cat., p. 196. ||

¶ Engraved in Cat., p. 197. †

‡ Engraved in Cat., p. 198. §

§ Engraved in Cat., p. 199. ||

¶ Engraved in Cat., p. 200. †

* Engraved in Cat., p. 185. †

‡ Engraved in Cat., p. 186. §

§ Engraved in Cat., p. 187. ||

¶ Engraved in Cat., p. 188. †

‡ Engraved in Cat., p. 189. §

§ Engraved in Cat., p. 190. ||

¶ Engraved in Cat., p. 191. †

‡ Engraved in Cat., p. 192. §

§ Engraved in Cat., p. 193. ||

¶ Engraved in Cat., p. 194. †

‡ Engraved in Cat., p. 195. §

§ Engraved in Cat., p. 196. ||

¶ Engraved in Cat., p. 197. †

‡ Engraved in Cat., p. 198. §

§ Engraved in Cat., p. 199. ||

¶ Engraved in Cat., p. 200. †

* Engraved in Cat., p. 185. †

‡ Engraved in Cat., p. 186. §

§ Engraved in Cat., p. 187. ||

¶ Engraved in Cat., p. 188. †

‡ Engraved in Cat., p. 189. §

§ Engraved in Cat., p. 190. ||

¶ Engraved in Cat., p. 191. †

‡ Engraved in Cat., p. 192. §

§ Engraved in Cat., p. 193. ||

¶ Engraved in Cat., p. 194. †

‡ Engraved in Cat., p. 195. §

§ Engraved in Cat., p. 196. ||

¶ Engraved in Cat., p. 197. †

‡ Engraved in Cat., p. 198. §

§ Engraved in Cat., p. 199. ||

¶ Engraved in Cat., p. 200. †

THE EXHIBITION AS A LESSON IN TASTE.

the best are negative, rather than positive; there is an absence of glaring faults, but no one feature of beauty; if we except the general harmonious colouring and uniform unobtrusiveness of detail, which last, however, is in itself a great quality.

To return to Europe. It is a fact well worthy of being pointed out to the attention of designers and manufacturers, that they should still suffer themselves to be so much under the influence of the French taste at the period of the first revolution. The fashionable popularity of Watteau seems to have first established this taste, and the vast amount of emigration which was the consequence of the revolution, particularly to this country, seems to have firmly planted it here, and here in silver-work it is still paramount, though it has been long discarded by the French themselves, as a school, for the earlier style of the Renaissance, which superseded the Gothic in the time of Francis I.

But why this popular style should be so invariably characterised by the innumerable shields or cartouches, it will be very difficult upon any reasons of taste to explain. In wood, marble, and in silver, we constantly find graceful curves and forms suddenly interrupted by a large pierced shield, with its projecting edges and angles, and which, so far from performing a service to the design, or of being in any way necessary to it, is in direct antagonism to the whole spirit of the forms with which it is united, except in our own Elizabethan, where it is, on the contrary, valuable, being in perfect sympathy with the ruling features of the design: of the flat strap-work of which it is a simple appendage.

By the separation of the Renaissance as developed in the examples we have pointed out, into its two distinct elements of curved and angular forms, we do actually resolve it into two distinct and popular styles, the Cinquecento and the Elizabethan, for it amounts in nearly all its great examples to a mixture of these two, although generally neither style is well expressed in the combination, one necessarily neutralising and supplanting the other. As an illustration, this value of the individuality of expression in design is very well shown, in the variety of papier mâché specimens exhibited by Walton & Co., of Wolverhampton,* or in some of the papers by W. Williams & Co., of London.

Abstaining from further details at present, having explained the general impressions as regards ornament, of the most prominent classes of manufactures, we may venture upon some comparison between English and foreign specimens in the respective classes.

First, generally, the English side does not betray that great inferiority of taste which has been so long prognosticated of it; on the contrary, in some respects, there is a palpable pre-eminence, on the part of this country, in many articles of general use; but on a more careful investigation, turning our attention to abstract taste in design, a very decided inferiority must be admitted.

This is not in the application of design, but in ornamental design itself; nor is it so much in the absolute work as in the taste which guides this work. However, in the more magnificent foreign productions, especially those of France, besides the excessive mannerisms of working only in one style, however clerical, there is a disregard to usefulness, or the general waste and means, which essentially detracts from that high credit which the mere design or artistic execution of the work would otherwise ensure. It is very much easier to produce a successful result with ample than with contracted means, and infinitely more meritorious in the manufacturer to produce a simple beautiful work, which shall be within the reach of the world of taste in general, than the accomplishment by an extraordinary effort of an extraordinary work, which he cannot easily repeat, and which it is beyond the pale of all but regal or princely means to derive gratification or benefit from. It would be no distinctive feature of an age to work well for princes; princely means have secured princely works to all ages, of different quality at different times, and according to the varieties of taste; some being gratified by rare and exquisite Art, others by minute elaboration and expenditure of labour, and others again by an ostentatious display of precious metals.

The Exhibition will do nothing for the age if it only induce a vast outlay of time and treasure, for the enjoyment of the extreme few who command vast means.

This we take to be no object of the Exhibition; and although

we must admire for themselves such productions as the great French sideboard, or some of the Gobelins carpets, or the larger Sèvres specimens,[†] or the Austrian furniture,[‡] these are not the fruits which will bring about the great results which should accrue from this unexampled event, though they may aid them negatively by rather warning us that beautiful effects may arise from infinitely less outlay of either time or substance. And one great source of congratulation to ourselves is, that by the evidence of the Exhibition, this is a result far more likely to be accomplished first in this country than in any other. While England has been devoting nearly all its efforts to the mere comfort of the million, France has expended its energies, for the most part, over luxuries for the few; it is an amalgamation of the two that we require, fitness and elegance combined; recreation for the mind as well as comfort for the body. It is perfectly right that there should be single works of great cost and magnificence, both because there is a demand for them, though limited, and as a means of inducing the utmost efforts of Art, and to serve likewise as a key or standard by which mere ordinary works may be tested, and artists stimulated to legitimate rivalry commensurate with a bumper class of production. However, when a costly work is distinguished by exquisite taste, it is something more than a specimen of costume, which is sufficiently distinct from taste or beauty, and a skillful work will be beautiful, not by virtue, but in spite, of its materials. Good taste is a positive quality, however acquired, and can impart such quality in perfection to even the rudest materials; it is taste, therefore, that must ever be the producer's most valuable capital; and this, in our opinion, is the capital which the English manufacturer may acquire in the Exhibition from a careful study of many foreign productions.

In silver-work, for instance, the inferiority of the English manufacturer to the French is very striking, though, perhaps, the most beautiful work of this class in the Exhibition is German—namely, the table ornament in oxidised silver, by Albert Wagner, of Berlin. But the stalls of Froment-Meurice, Derrard, Rudolph and Gouyon, display many examples of exquisite taste, and at the same time of a simple character.

In wood-carving, but more particularly in its treatment, there is an equal superiority of French and German work over English; and, indeed, foreign carving and modelling generally are of a better quality than the home specimens.

The same superiority is evident in the printed cottons and muslins, though the Scotch dispute pretty equally with the French prints from Muthous. In silks and satins, ribbons, and in shawls, there does not appear any very evident disparity, but it is notable that many of the best Lyons specimens are manufactured expressly for English houses.

The British, French, and Austrian Châlemeres shawls seem of nearly equal merit; the houses of Morgan, and Kerr, of Paisley; of Haskelley, of Norwich; of Duché and, and Demoureaux, and Bingham, of Paris; and of Martinot, and Berger & Son, of Vienna, exhibit many magnificent specimens of this class, which it would be difficult to distinguish in point of merit.

In lace the finest specimens of design are English, Mrs. Treadwin's Flounce being, perhaps, unrivalled in this respect, though Vanderkelen-Brown, of Brussels, is superior to all competitors in delicacy of fabric. The specimens from Ireland are likewise conspicuous, and considerable taste is displayed in some of the Swiss, Scotch, and Irish embroidered muslins, and in the damasks of Dunfermline and Belfast, many of which are excellent.

In general hardware—especially grates—England has no competitors, and the Exhibition seems to indicate more unusual efforts in this manufacture than in any other: some of the specimens in burnished steel and ornate from Sheffield, Bolton, Birmingham, and Coalbrookdale, and of London, indicate a great advance in the appreciation of Taste, and are a certain evidence of its soon very materially influencing the more ordinary classes of grates in common demand.

In ornamental bronzes no country shines: candlesticks are not creditably represented, and candle-lamps are much in the same obscurity; the large chandeliers alone are confused and tasteless:

* Engraved in Cat., p. 186.

† Engraved in Cat., p. 189.

‡ Engraved in Cat., pp. 189-92.

† Engraved in Cat., p. 189.

‡ Engraved in Cat., p. 185.

‡ Engraved in Cat., p. 185.

THE EXHIBITION AS A LESSON IN TASTE.

the chandeliers and other works by Potts,* and by Messinger † of Birmingham (which town shows altogether with surprising force in the general quality and in the variety of its contributions), are perhaps the chief exceptions to the comparative inferiority of this department of manufacture.

In other respects, in works of a more purely ornamental character, in metal work, M.M. Palloué of Liège, André of Paris, Jacquet of Brabant, Berthélinne, Matifit, Vittor, Villenars, Méne, Elkington, Winsfield, Hatfield, and the Coalbrookdale Company, exhibit much beautiful work.

In carpets, there is a decided superiority on the side of home production; notwithstanding much that is staring and inconsistent. The carpet is, however, an article of comfort that is scarcely yet in general use on the continent of Europe. Hence the French specimens are of that impracticable coarseness which betrays at once that they are made for show rather than use; although the more pattern carpets are anything but successful in this respect even: the French designer's skill in a paper-hanging seems to forsake him when he transfers his labour to a carpet pattern. Impracticable coarseness appears to hang also over *Sèvres* porcelain; for in the adaptation of the beautiful to the useful in this department, as well as in that of glass, the English manufacturers are pre-eminent. The English ornamental works in pottery or porcelain do not yield to the French either in elegance of shape or in decoration, while at the same time they are far less costly. The specimens exhibited by Messrs. Copeland, Minton, and Wedgwood, place England in the highest rank in this manufacture, in spite of the fostering patronage of royal families abroad. In glass, England appears to be almost unrivalled, not only in the purity of its crystal, but in the manufacture and application of this invaluable material; to instance only the matchless specimens of Messrs. Osler & Apdley Pellatt,‡ and the magnificent elabo of coloured glass of Swinburne & Co., of Newcastle-upon-Tyne, or the ornamental panes of Chance Brothers, of Birmingham.

We will now proceed to review *seriatim* the principal classes of ornamental manufacture in detail, always limiting our remarks in accordance with the prescribed object of this essay, to the development of Taste, in order, by this analysis of designs, to endeavour to draw the attention of our manufacturers and designers to the source of all beauty of effect—the elements of design itself.

IV.—The precious Metals.

We commence with gold and silver-work,—not as the most important branch of manufacture, but, as being purely ornamental, it is the most prominent object for ornamental criticism, and that to which perhaps the greatest skill has been devoted from the earliest times. Though the Exhibition affords a vast display in amount, there is no great variety or choice of taste; the *Lois Quinze*, prevailing, and in every phase of its development, from the symmetrical variety proceeding immediately from the *Lois Quatorze*, to the most bizarre vagaries of the *Rococo*; which last very much predominates.

Though the English silver-work exceeds in quantity, by several times, all that is exhibited by other nations, it displays far less variety of taste; it is clearly under the absolute control of trade conventionalities, which, from the character of the prevailing style, appear to have been imported with it, in the latter part of the last century. Besides, the interminable coquillages of the *Rococo*, the constant contrast of dead and burnished silver, making up the chief feature of so many works, is absolutely fatiguing to the mind that seeks, or can receive, any impression of delight from an ornamental composition.

The system of *beating out*, to produce the whitest possible appearance of the silver, seems to be one essentially opposed to the display of excellence of design; and when the dead white tints produced is combined only with burnished portions, the sole effect of a work is a mere play of light without even the contrast of shadow. The result is a dazzling whiteness; pure flashiness, in fact, such as precludes the very idea of modelling—for this can only be displayed by a contrast of light and shade, which, in us, is so uniformly a dazzling

mass as an ordinary piece of dead and burnished silver plate, is impossible.

Flashiness may be a natural refuge for vague undefined forms, to the deformation of which it is an effective cloak; and so long as our silversmiths adhere to their *Rococo* scrolls, and other inanities of the *Lois Quinze*, its aid will be indispensable. Immediately the details of design, however, are substantially reformed, frosting and burnishing, except as occasional incidental aids, must go together with the preposterous forms to which alone they owe their present popular development. If we turn from the English to the foreign silver-work, the contrast in this respect is surprising; frosting and burnishing seem to be unanimously banished from all high class design, whether French or German, and oxidizing substituted in their place; and the consequence is, that in many foreign examples we have specimens of the most elaborate modelling, most effectively displayed as works of Art; the minutest detail fully asserting its own merits, and at the same time, contributing its portion to the general expression of the whole, in all the oxidized specimens. The process of oxidation, as it is termed, not only protects the silver from further tarnishing, but can convey every variety of tint from white to black, so that it is particularly well calculated to display fine modelling or chasing, which would be utterly thrown away in a dazzling white material. The merits, therefore, of the two methods depend on the object of the silversmith, whether it be his desire to display silver as a more noble metal, or to exhibit a work of Art in a noble metal; whether the metal be paramount in his estimation, or only a noble tribute to a noble Art—doubtless, many can only look at a silver ornament as a work in precious metal, just as they value precious stones for their sterling worth, not for their beauty. But there is an extreme distinction between the sentiments with which we ought to view a diamond and a piece of plate; the first we admire for its reflective power, and as a rare mineral, that is, as a natural curiosity; the second, on the other hand, is to be looked at purely as a piece of human ingenuity; their only common field is that both delight us through the sense of vision.

If we exhibit silver-work for the reflective power of the material, we should treat it exactly as we do glass, display it for its physical properties only, and shape it accordingly; but even the most inveterate froster and burnisher would hardly admit that his labours had no other end in view than a display of catacombs, in a friendly, though hopeless, rivalry, with the dissection of the lapidary—for such efforts every material must yield to the silvred glass of Messrs. Varnish, of Berners Street.

We hold it to be proved by the Exhibition, that all frosting and burnishing, except for occasional relief or variety among the minor details of a design, are fatal to silver-work as Art, however they may enhance its effects as specimens of a noble metal.

The most striking piece of silver-work in the Exhibition is the large *Vase* or table ornament, by Albert Wagner, exhibited by Wagner & Son, of Berlin*. It is in oxidized silver, and is about four feet six inches high. The design is an allegory of the gradual civilisation of man; the allegory, however, be it ever so good, would be quite out of place, were not the whole composition admirable as a work of formative Art, both in design and execution; in the disposition of the whole, in the treatment of the figures, and in the elaboration of the ornamental details. As regards ornament, the style is a mixture of natural and conventional forms in the spirit of the *Quattrocento*, as represented in the gates of Ghiberti. In the lowest position, we have the Lion and the Serpent, indicating man's victory over the animal world, ingeniously combined into an elegant and masterly tripod support of the circular base, which is decorated with a rich moulding of fruit arranged in a running vertical around it; above this we have at the lower portion of the stem, man in the domestic state, represented by the huntsman, the fisher, and the shepherd, with their attributes, both means and results; and immediately above these, decorating the upper part of the stem are, Pomona, Ceres, and Flora, in reference to the second stage of civilisation; over their heads are hanging rich clusters of grapes: the *Vase* itself is ornamented on the underside with a conventional treatment of the acanthus, and a chased frieze in bold relief, representing the cultivation of the liberal arts and

* See Cat., pp. 125, 126.

† Engraved in Cat., p. 126.

‡ See Cat., pp. 125, 126.

§ Engraved in Cat., p. 124-5.

* Engraved in Cat., p. 140.

sciences, indicating the third stage of civilisation; on the upper edge is a rich border of foliage in high relief, likewise arranged in a running vortex, with an anthrion series as the decoration of the edge itself. From the centre of the Vase proceeds a palm, on which is a winged genius, having reference to man's triumph over evil, and consequent final victory over himself. All the details of this beautiful work are executed with strict attention to natural truth, and at the same time disposed with the closest adherence to ornamental symmetry. But, we notice it far more for its value as an example of how the most comprehensive notions may be made perfectly subordinate to the principles of ornamental design, than for the ideas themselves, or as a mere specimen of silver-work, admirable though it be as such; its highest merit is its excellent *ensemble* as a specimen of Ornamental Art, irrespective of material, whether for its general effect or its treatment of detail. Yet had this fine work been in dust and burnished silver, it might have been entirely overlooked, for its exquisite details of modelling would have been indiscernible, and its style is such, that its *ensemble* would have been of a very pretentious character compared with those of the rampant Rococo.

Turning now to the French department, we find very many exquisite specimens of silver-work, and in different tastes, but those of the highest class invariably oxidised, as the admirable *Milieu de Table* exhibited by Froment-Meurice, belonging to the Duke de Laysnes; a table in extremely delicate Renaissance work, with a prevalence of natural details, altogether admirable in execution and tasteful in design, by Rodolphi;* and some equally good specimens by Guéydon, where the effect of oxidation is very well illustrated, as it is so variously applied†—in boxes, cups, coffers, swords, statues, and in the fine group of the "Horse and Slave." There is not one specimen of frosted or burnished silver on either of these stalls, and the advantage of the effect of the oxidised may well be compared by comparing the *Table*, or a Covered Dish by Rodolphi, or the Slave and Horse by Guéydon with the frosted and burnished examples exhibited by M. Odier, of Paris, of which the magnificent Louis Quatorze dinner service is the finest of its class in the Exhibition.‡

The modelling of the details and animals in this service is excellent, but their value is lost through the merely dazzling effect of the combination of matting and polishing, which transcends every other consideration. There is something positively vulgar in such a mere metallic blaze as a service of this kind displays; had the various pieces been only slightly oxidised, as the equestrian statue of Napoleon, by Nieuwerkerk, in the same stall, or the centre-pieces by Wagner and Froment-Meurice, or the group of Queen Elizabeth and Leicester, by Jeanneret, exhibited by Messrs. Elkington, the effect would have been most imposing in comparison; the impression of the nobility of the metal would have still been there, and every group and object, whether natural or ornamental, would have attracted its due share of admiration; for the modelling of the various natural types is excellent, and the treatment of the mere ornamental elements of the style is as tasteful, and as skillful, perhaps, as the elements themselves admit; superior, probably, to any genuine elaboration of the style in its own period; and this set is, perhaps, on the whole, the most complete representative of the prevailing modern taste in silver-work exhibited, for it has all its merits of design and characteristic conventionalities of execution combined at once.

There are several other specimens on a similar scale, and in the same style, which equally suffer from the fashion of frosting and burnishing. The pure colour of the silver, unaided by frosting or burnishing, provided a difference of texture be observed in different objects, would have an infinitely more artistic effect, without having recourse to oxidising. If the dulness thus produced should be an insurmountable barrier to a public taste too far compromised with frosting and burnishing. Still that oxidising does not altogether destroy a certain metallic brilliancy, those specimens more delicately oxidised, already pointed out, are sufficient proof; and the group of Queen Elizabeth and Leicester, by Jeanneret, is of that excellent intermediate character, that it may safely be referred to as a model for the more treatment of the silver as a material of Art; it is not sufficiently oxidised to

suggest dirt or dulness, but quite enough so to admit of any display of the most elaborate execution, and it at the same time is a fine example of variety of texture, in accordance with variety of substance represented.

Before leaving the French department there are a few objects to be pointed out, and yet one or two general impressions to be recorded. All the works of the greatest pretensions of design are oxidised; the prevailing style is the mixed Renaissance that we have already had occasion to explain, and it is evident that still the great model of the French silversmith is Benvenuto Cellini, notwithstanding several important specimens of the Louis Quatorze.

One of the most striking examples of the influence of Benvenuto is the very magnificent Fontaine à Thé, exhibited by M. Durand, of Paris;* it is entirely of silver, but by recourse to gilding, burnishing, oxidising, and niello, a most beautiful variety of effects is produced; the varieties of effect adding the design. Though a complete tea-service, it is designed to constitute a *Milieu de Table*; the general effect is that of a vase and pedestal, the vase being the urn, and the tea-pots, cream-jugs, sugar-basins, bread-baskets &c., being placed on four several stages on the pedestal below. The design represents admirably the mixed Renaissance of the sixteenth century, and is beautifully executed. The various elements of the style are very well expressed,—the cinquecento grotesque scroll-work, the scrolled and pierced shields, and the conventional Saracenic foliage in relief, illustrating the origin of Elizabethan strap-work, and at the same time by the beauty of its effect, the value of the Saracenic element. This work is further a good example of the mixed Renaissance being virtually a combination of the Cinquecento and the Elizabethan.

In the stall of Froment-Meurice, of Paris, are likewise many prominent specimens of exquisite taste, in jewellery and in oxidised silver in various styles, comprising some actual groups (for sale) of surprising effect, in oxidised silver. The most important, though not the most beautiful, work is, however, the magnificent toilet-table and glass, with ever and basin, candlesticks (girandoles), and jewel caskets, in silver gilt and enamelled, a present from the legitimists of France to the Duchess of Parma.† Silver-workers of such magnitude, even though presentation pieces, bring their work to the province of the ostentatious than the beautiful, and the general style of this service certainly makes it so exception: it is another of those examples of somewhat impractical coarseness for which the French have distinguished themselves in the Exhibition. In style it is mixed, of the natural school, but a Gothic character prevailing, as shown in the pointed arches of the glass frame and of the jewel caskets, in the ivy stem and leaf, and in the general vertical treatment of the fly and fleur-de-lis clustered as emblems, but rather in the German than the French taste. The ever and basin and the caskets contain much admirable work in the details, but as a whole it is rather a display of magnificence than of that exquisite artistic taste which characterises nearly all the other works exhibited by M. Froment-Meurice; the legs of the table particularly are wholly objectionable to criticism.

The *Milieu de Table*, belonging to the Duke de Laysnes, is a noble example of *reposed* work or *embossing* with the hammer, and it displays some fine modelling of the figure by M. J. Feuchères; it is an allegory of the world—four giants or Titans support the globe, above which are Bacchus, Ceres, and Venus, with other symbols; it is in oxidised silver. Another beautiful object is a vase, also in oxidised silver, offered by the City of Paris to the engineer, H. C. Emery, in exquisite Cinquecento taste in spite of its Renaissance cartouches. Here are likewise a magnificent shield in oxidised silver and iron; a Gothic chalice, silver gilt and enamelled, designed as a present for the Pope; on the foot are figures, in oxidised silver, of Faith, Hope, and Charity; also a Cinquecento tea-service of very good effect; and a hunting-knife, of great beauty, with the handle composed of gum, and which, contrary to the general rule of such devices, is well adapted to the hand. M. Guéydon also exhibits several swords of this character, which, though good as designs, are of very doubtful propriety considering their ostensible destination, even though they be really made for show rather than the hand.

* Engraved in Cat., p. 144.

† See p. 285 of Cat.

‡ See specimens to p. 107.

* Engraved in Cat., p. 145.

Engraved in Cat., p. 139.

THE EXHIBITION AS A LESSON IN TASTE.

M. Marrel also exhibits many minute objects of taste. In German silver-work there is little beyond the large vase, by Wagner, if we except, perhaps, the hunting-cup in the Cinquecento style, by Jacobi, of Brunswick, and a vase of flowers more curious than beautiful,* in the octagon room, by Strube & Son, of Leipzig; the same must be said of the gilt and enamelled chousen, in the same compartment, by Wieshaupt & Sons, of Hanau.†

The Russian is in a similar taste with the English, the Louis Quinze being its archetype; but nearly all the specimens exhibited are as good samples of the style as any in the Exhibition; they never decay to the Rococo. There are, besides these, some copies of old works, as a hanap, of the seventeenth century, and a Cellar vase, silver-gilt; and several specimens of the natural school of ornament, some of humorous character—as the Bear candleabra. But the principal effort is the large centre-piece, consisting of an historical group under a fir-tree; the composition and modelling are highly effective, and wholly without the aid of either frosting or burnishing, but by the pure naturalism of the design, we have the anomaly of a dish placed on the top of a tree; a trifling inconsistency, however, compared with what we have on the English side of the Exhibition.

Spain, faithful to its historically-eroticated taste, exhibits a magnificent gilt Gothic tabernacle, by Morilla, of Madrid. And the Italian contributions are nearly all comprised in the flagrant work of Lohs, of Genoa.

In passing from the foreign to the English silver-work, the general change of taste is very decided, and though there are some exceptions, the general inferiority is not to be overlooked. The first work which attracts our attention is the large centre-piece, a candlebraum, and flower vase, designed and executed by A. Brown, in dead and burnished silver, in the nave, exhibited by Hunt & Roskill. This piece, though displaying the characteristic fashion of the prevailing home taste of the present day, possesses also many merits of design, which are conspicuous in spite of boiling oil and burnishing, though the modelling of the high reliefs in dead silver, in the centre, displays only half its merit, through the want of shade or in detail.

The design is somewhat complicated, and in two distinct parts, Candlebraum and Phidias; the candlebraum is decorated, at its base, with groups of the four quarters of the Globe, with an altar-relief of Apollo and the Hours, or Day and Night, as a frieze, around the stem; on the plateau below are groups of the Four Seasons. The style is of the mixed Renaissance, with rather a prominence of the more characteristic Cinquecento details, as griffins terminating in vegetable forms, and more conventional scrolls; but sufficiently mixed with the ordinary details of the Renaissance. The want of variety of texture, a characteristic defect of English silver-work, is much felt in this great piece, though its large size renders many deficiencies of detail, which would be otherwise desirable, comparatively unimportant, and it has altogether a magnificent effect, and is, doubtless, the finest centre piece exhibited on the English side. Still, if the figures, especially the groups, had been only slightly oxidised, instead of dead white, the effect would have been immensely enhanced, in our opinion. No better evidence of the value of oxidation need be pointed out, than the shield and the vase, by Antoine Fournier, though, perhaps, overdone, exhibited also by this firm, in their stall in the gallery; the vase with the Battle of Jupiter and the Titans; and the unfinished shield, with Shakespeare, Milton, and Newton, and the genius of the Arts in the centre. The shield exhibits some chasing of unquieted beauty and delicacy, and owing to the oxidised surface shows with all the vigour of a fine proof engraving. There is, in this stall, also a Cinquecento vase in silver, gilt, and enamel, which is conspicuous among so many others in a very different taste, chiefly the Rococo, of which Mr. Brown's candlebraum is the Marquis of Tweeddale;‡ is a fair example. The general want of the variety of texture, is further well illustrated by the two small gilt equestrian statues of Napoleon and the Duke of Wellington, which though well modelled, are wholly wanting in effect.

In the stall of Moris & Co. a superior taste prevails. There are here several good specimens of the Cinquecento, but some of

them appear to be injured by the stomach, which are too varied and too strong in colour for such objects; otherwise the following are excellent—a vase and dish in crystal of exquisite form, an oriental agate cup, a lapis-lazuli cup, and a gilt vase, with a frieze in relief in oxidised silver, representing a bear-hunt in German Cinquecento; also a gilt enamel-basin, and a few other objects insignificant but tasteful, as a stork and a marabout paper-weight.

A toilet-glass* on this stall, in silver, from its tasteful and symmetrical arrangement shows that even the Louis Quinze is capable of agreeable effects; its shape is such that the details used are in exact sympathy with the form of the whole.

The large equestrian statue of Queen Elizabeth, exhibited by this house, by Cavalier, is another fine example of *reponed*, or hammer-work; and in colour is another good illustration of how wholly superfluous is the process of frosting. We have in this group the simple colour of the metal, and it shows that, saving the prevention of tarnishing, there is no real necessity for oxidising, though it indubitably enhances the effect of the form.

Mr. Joseph Angell also exhibits several specimens of delicate taste, chiefly in the style of the Renaissance, but with a sufficient mixture of Rococo: a chert jug, in Etruscan or early Greek taste, is a notable exception,† as in a style hitherto very rare in modern silver-work. Of more modern taste is conspicuous a jug with vine-twigs twisted round it, which, with its frosted leaves and burnished fruit, gives a rich variety to the vessel; and this application to distinct minute details, as mere accessories, is a legitimate mode of introducing frosting and burnishing.

Mr. George Angell also exhibits some extremely beautiful classical jugs, and some good Renaissance specimens, and also a very superior candlebraum, with a frieze defending her curls against a bon-construitor.

Messrs. Watherston & Beagles exhibit a very effective design by Mr. A. Brown, a gold vase in the Renaissance taste, with scrolled and jewelled base, surmounted by an emblematic design of Great Britain.‡

Messrs. Garrard have two stalls; amongst the most conspicuous objects in the smaller, containing several good specimens of modern taste, is a large Moorish candlebraum of some pretension, but indistinct in the details owing to the brightness of the metal; and also a good Renaissance ten-set of a Moorish character; there is no Rococo on this stall.

Lambert & Rawlings exhibit a handsome pair of wine flagons § of unusual shape.

Mr. Hancock exhibits two race cups—of the Warwick and the Goodwood—distinguished for the fine modelling of the dogs and horses, &c., from designs by Mr. McCarthy; the effect, however, is very materially injured by the bright scratching of the figures, and the attempt at rendering the hair of the horses, out here and there, but uniformly, the object is in itself futile, for the hair is not so conspicuous upon a horse that it need be prominently elaborated in a small silver model; we see the shape of a horse not his hair, and on the small scale of these models a much more delicate indication is required.

In this respect the horse of M. Jeannot, in the Elkington Group, or that of M. Gierston, may serve as a model of treatment; the animal's coat is sufficiently represented without the artifice of a palpable elaboration of hair coarse enough for an animal of the natural size.

A Greek vase and ebony table, with an anthemion inlaid in silver, and also an ebony and silver gilt box, on this stall, are worthy of attention as out of the ordinary taste.

Mr. Thomas Shap also exhibits a candlebraum in electro-plate, with a group of St. George and the Dragon, which is in a very superior style to the average of such designs.

Payne & Sons, of Bath, exhibit a beautiful vase from an old Roman marble.¶

Smith, Nicholson, & Co. appear as the most decided representatives of the "naturalist school," as we must term this taste; but there are evidences besides in the stall of an appreciation of classical ornament. This firm exhibit a very pleasing, domestic service, designed by Mr. J. S. Archer, and made for the Duke of

* Engraved in Cat., p. 47.
† Engraved in Cat., p. 55.

‡ Engraved in Cat., p. 396.
§ Engraved in Cat., pp. 119-120.

¶ Engraved in Cat., p. 115.
‡ Engraved in Cat., p. 105.
§ Engraved in Cat., p. 109.
¶ Engraved in Cat., p. 106.

THE EXHIBITION AS A LESSON IN TASTE.

Bomburgh,* which, though possessing great beauty of general arrangement or grouping of the forms, is open to the theoretical objection that we have natural objects performing impossibilities; the fuchsia, the lily, the thistle, and the vine, are, respectively, without any artificial or mechanical aid, made to support dishes upon their delicate flowers or tendrils; the simple contrivance of a central support to these dishes, would, with an imperceptible alteration of the several groups to render them necessary instead of principal, have most certainly added to the beauty of effect, and obviated a very great offence to sound criticism. There are several other similar designs, graceful in their general forms, but open to the same objection; and here, too, the inveterate frosting and burnishing everywhere obtrude themselves.

Colles & Co., of Birmingham, exhibit two services, for Mahmud Pasha, and for the Prince of Naples, in very appropriate styles of design; and also a tea-urn, with dragon handles, of an Elizabethan character, in good style.

Dixon & Sons, of Sheffield, exhibit a chaste classical soup tureen.†

Hay ver & Co. exhibit some graceful forms, several of which are from classical models; and also some Renaissance and Gothic specimens. The classical forms of this stall, as well as those of the Messrs. Wedgwood, George Angell, and a few others, show that beauty can never really be antiquated, or old-fashioned, whatever the conventionalities of the day may be. An essentially ephemeral taste, which has owed its popularity to some incidental circumstances or caprices of the moment, can never be a subject of revival, however it may itself interfere with the establishment of a purer taste. What is inherently beautiful is for all time, and the repeated attempts at the revival of classical forms, with a steadily increasing interest on the part of the public in spite of fashions or conventionalities the most opposite, is at least one sure test of the inherent beauty of form of these vessels of the ancients, and an earnest of their eventual triumph, and, it is to be hoped, the banishment of all others from the market that cannot boast an approximate, if not equal merit, whether in a different or a similar taste. It is a morbid taste to hunt after variety purely for variety's sake; and it is perfectly legitimate to preserve all that is beautiful, however we may continue to prosecute the search of the beautiful in other provinces; it is delusion in itself to insist on this.

The stall of Messrs. Elkington is another justification of our adhering to what is beautiful for its own sake, independent of all other considerations; the reproductions of Persian and other ancient forms in this stall, and other repetitions in bronze and silver from the Cinquecento treasures, (the table in electroplate, by G. Stanton, of the Birmingham School of Design, is a beautiful adaptation of the Cinquecento) old as they are, strike the eye with an extraordinary degree of freshness after the vast collection of Baroque and Rococo varieties of the novelties of the day, displayed by English silversmiths in the aggregate.

Efforts at variety, unless founded on the sincerest study of what has already been done, not by our own immediate rivals in our own time, but by all people at all times, are at most but assumed novelties; but, if such, the chances are that it is their only recommendation, as their novelty represents the extinction of all the beauty of the past; which will leave little enough behind; and it must be indeed fortunate who alights upon a valuable system of forms or combinations which have escaped all the eager searches after beauty of the last 2000 years.

The very vague taste displayed generally in modern silver work, is the pure result of this injudicious hankering after something new, without the justification of a sound study of the old to warrant it. Each beautiful form will of itself admit of a thousand variations of detail without interfering with its essential form or properties; as, for instance, the common pitcher: nearly all countries, from the time of Abraham, have used the same species of vessel for carrying water—the Egyptians, the Greeks, the Etruscans, the Romans, the Chinese, the Hindoos, all down to the present day, have preserved in constant use a pitcher form of jug identical in its essential shape; it is, in fact, the most convenient adaptation of form or capacity to use—a curved, narrow neck, and comparatively broad body, the foot and handle varying according to circumstances. All are absolutely mere variations of the pitcher

of the *Nyctanthes distillatoria*. Many of the most beautiful ancient jugs or vases are nearly fac-similes of this form, with the mere addition of a foot; but nothing will ever make such a form old-fashioned or distasteful, if for no other reason, simply because it is a form essentially adapted to its use. What is recommended by use never grows old; it is only what is fostered by fashion that will be superseded as a new fashion arises. So it is with the terms of the styles; some are characterized by mere local peculiarities or special objects, others by abstract principles. Local peculiarities, and all specialities, when their causes cease, must die out, and cannot be revived except by a revival of the cause; and so, if their causes cannot be recalled, it will be impossible to revive several of the historic styles; but where the causes of styles still exist, the styles themselves are as much of this age as of the past. The Classical and Renaissance styles are founded on abstract principles, and therefore may and will be revived, when their novelties are once understood, and their restoration will then not be a copy, but a genuine revival of the taste itself. It is not so much the business of criticism to create taste, as to destroy what is vicious in it; the critic judges, and he fulfils his functions if he only condemn the bad, without lauding the good; to laud the good and pass over the bad in silence may be more generous, but it is certainly less sure; and if the critic be not allowed to freely criticize what is exposed to public criticism, better that his functions cease altogether; for of all evil genii, the most mischievous are those who only flatter or bemoan our follies and our vices. Our observations on this department of Art-manufacture have been restricted rather to principles, or general expressions, than devoted to individual details; and it would be utterly impossible to review the Exhibition otherwise, especially in an essay of this character, which attempts to be suggestive, by comparing and making prominent the ruling ideas which influence a taste.

V.—Carving and Modelling, &c.

One of the most important branches of ornamental manufacture in the Exhibition is that of carving and inlaying in wood. This branch of industry, as more generally accessible and applicable, and accordingly in far more extensive demand, than manufactures in the precious metals ever can be, is one of the best fields for the spread of taste, and although nobly represented in the Exhibition, perhaps better than any other branch of Art-manufacture whatever, is still capable of a much more widely extended use than we find here displayed.

The good specimens are mostly of a very costly kind, and the others are generally rather distinguished for quantity of detail than propriety of application. This is a feature to which we wish particularly to call the attention of our manufacturers, whose productions, with only few exceptions, are generally very inferior to those of the French and German carvers, and, in some cases, the Flemish and Italian.

As the very essence of this essay is the expression of opinion, without assuming any special value for our opinion, we find three great objections to the character of English carving in several of its specimens of most pretensions; such as are exceptions we shall presently specify. These objections imply every way but those of mere mechanical skill and manner:—in the first place, there is a want of definite design, and disregard of utility; in the second, an overloading of detail; and, in the third, a disagreeable inequality of execution, one part destroying the effect of the other. For example, in some instances, where the human figure or animals are mixed up with mere conventional ornament, as a strip or shield-work, the last is perfectly well designed and executed, while the former are absolutely barbarous in conception and in execution, effectively betraying the weakness in design and the absence of taste. Other specimens found their pretensions solely on abundance of detail, every other quality being overlooked; and there are others again that are conspicuous only for their bad style, or their ill conceived mixture of styles. We lay prominent stress upon these defects, as they are really the sin of the masses of all these various faulty results, which so infinitely disfigure the majority of the specimens of this beautiful Art.

The general superiority of the French in wood carving (at once

* Engraved in Col., p. 176.

† Engraved in Col., p. 177.

THE EXHIBITION AS A LESSON IN TASTE.

the most mannered, and at the same time the cleverest artists), is as decided as it is in silver-work; but there are also some exquisite German, Flemish, and Italian specimens. Of these, the Austrian, though the most conspicuous, are far from being the best; but as having attracted more general attention than any others, we may as well turn our attention also first to the magnificent furniture exhibited by M. Leitner & Son, of Vienna, from designs by the architect Bernardo de Bernardis.* We have here the furniture for four rooms, but in three styles, mixed and distinct, Renaissance, Louis Quatorze and Louis Quinze. The Gothic bookcase does not belong to the suite.

In the Ladies' Library, we have besides the Gothic oak bookcase of the "Devoted" taste; with some illustrative figures beautifully treated, also a Renaissance bookcase of novel and simple character,† but somewhat mixed with the Louis Quinze, like most of the designs by M. de Bernardis here exhibited: also a table in inlaid wood, Louis Quatorze.

In the drawing room we have some very massive specimens of furniture, the taste of the Louis Quinze prevailing, as in a sofa, but it is symmetrically treated, with an agreeable prominence of natural flowers and great freedom of execution and general fulness of curves, the elongated acanthus foliations of the Louis Quinze. In the large sofa, and in the footstool, we have the Louis Quatorze. The chairs are more decorated, perfectly symmetrical, and have a broader treatment of the seatstuffs; the arm chairs, enriched with bouquet centres, are altogether excellent. The miniature stand, also, displays an extraordinary fulness of style, Cinquecento scrolls and monsters being mixed with the Louis Quatorze; the frames are Louis Quinze. There are also Louis Quinze and Rococo side tables, which, however, through their positive symmetry, are not disagreeable. A small table with Elizabethan marquetry and Rococo feet is the only objectionable piece of furniture in the room; the large and small round tables in Louis Quinze have a good effect.‡ The furniture of the dining-room is in similar taste; the sideboard, a marble slab, has some extremely massive carving, and the footstool of fruit are elaborately and boldly treated at the same time.¶ The legs of the dining table are a magnificent example of the Louis Quatorze. But perhaps of the whole of this suite of furniture, the finest designs are the chairs of the bed-chamber, which are very beautiful specimens of the parent Louis Quatorze, the shell as a centre, rich acanthus scrolls combined with foliate-shaped members, a Renaissance feature. The sofa and looking-glass frame are similar in taste, a Louis Quatorze treatment of Renaissance scrolls and shields, the various parts being rounded instead of flat. The sofa has more of the Cinquecento character of design, though still with Louis Quatorze treatment; the boys holding the acanthus scroll have a rich effect, and are admirably treated. Some of our upholsterers would do well to take a lesson from the furniture of this room, which, with the exception of the gorgeous Renaissance bedstead,** it would be difficult to surpass in any sense; it combines both utility and beauty in this style, in the highest degree.

Such praise may seem inconsistent with the mixture of style described; but there is no mixture of incongruous elements; the Renaissance and the Louis Quatorze varieties are closely connected in their elements, though they have their own proper treatments. But the Louis Quatorze can appropriate any curves, provided they have given them the characteristic roundness of members of this style; the introduction of the shell, and the rounding of the details of the Renaissance, comprise almost the whole process of transition from the Renaissance to the Louis Quatorze, which originally sprang from it. Of course, there is an impropriety in Louis Quinze and Louis Quatorze mixture, for the former is but an inferior variety of the latter, and where the treatment becomes masterly, there is not the slightest symptom of incongruity. The whole originality of this furniture, however, consists purely in these limited mixtures of style; but in some instances, as in the chairs and sofa of the bed-chamber, we have a more beautiful development of the Louis Quatorze than perhaps could be shown in any original example of the style in its own period. The various woods used are tulip-wood, walnut, and lime-tree.

The Austrian furniture is the chief contribution of Germany in wood-carving; but there are some other specimens of the highest merit, of which a drawing and writing table, and a wardrobe, in mahogany, by J. F. Wirth, of Stuttgart, literally in the style of the Renaissance, but in a decided Cinquecento taste, the whole exquisitely disposed and executed, are altogether of the almost elegance of pieces of furniture, and of the highest class as specimens of wood-carving. This is the style and taste which has commanded the greatest ability throughout every branch of ornamental manufacture; as we found in silver generally, and as we shall find in other departments as we proceed; but by our own manufacturers it has been comparatively seldom had recourse to.

Belgium also contributes some fine specimens of the Art to the Exhibition; and well applied; but here, again, the Louis Quinze is the prevalent taste, with little, however, of the coquillage in the best examples, and they are symmetrically treated; as seen chairs by J. T. Colla, of Antwerp, in which some delicate natural scroll-work is ingeniously mixed; but the masses are very slender compared with the Austrian. Compare also these chairs with such a work as the piano by Deffaux, with the coquillage scrolls and bulrushes, and you see the two extremes of this style; and this comparison will show how very much more a work depends upon the treatment of elements than upon the mere elements themselves.

Two other Belgian works—an oak gun-pew, by A. Beaumont of Brussels, and a wardrobe by Hooftaet, of Ghent, are good illustrations of the pleasing variety of effects attained by a cultivation of the style—the former Cinquecento, the latter Renaissance; in sentiment they are opposite, and contrast well; the delicate richness and gracefulness of the Cinquecento also here compare with great advantage with the formal geometrical figures of the angular Gothic.

There is something quite refreshing, from its rarity, in the Renaissance oak cabinet by Hooftaet, with its round arch and simple grandeur of style relieved by a mere contrast of signs and what appears to be a somewhat original plum or apple moulding; the whole moderately enriched by statues and high reliefs in panels.

The room, by Beaumont, is enriched with panels, containing hunting scenes; a stag's head and boys make a very appropriate top; and the scrolled frieze and the capitals of the acanthus order are in genuine taste. The capitals are novel; they are decorated with goat's heads, instead of the callicorn or spiral shape of the plant, in the original Corinthian, or the volutes of the Roman composite, to which order the echinus ornament between the heads shows that it belongs. All is in good taste, with the exception of the introduction of boys as the supports of the pillars, which they carry on their heads; though these things occur in old examples, they are the blemishes—not the beauties, of the style.

The samples of wood-carving from Italy are very few; but these are distinguished for delicate workmanship, and are in the ordinary Italian Renaissance in their general character; the large and elaborate Louis Quatorze frame in the Milanese room is an exception. The most exquisite Italian specimen is perhaps the small frame in pure Cinquecento taste by Pietro Giusti of Siena, in walnut; the more important specimens, however, are those by Angelo Barbellotti of Florence; but these are distinguished more for their abundance of minute detail, especially of the Cinquecento arabesque, than for general taste or effect; the mixture are overdone, while some of the most conspicuous portions of the design are worse than ordinary—as the lions in the cabinet or writing-table, which are wholly unworthy of the design and execution of the minor ornamental details. This work, otherwise, would be one of the most beautiful specimens of wood-carving in the Exhibition, and, but for the delicate shield-work introduced, would be also one of the best examples of the Cinquecento; it is pure in style, with this exception.

In passing to the French wood-carving, we first meet with the Art in all its multifarious bearings, and displaying its own proper capriciousness. All the French works of merit would be far too numerous to mention here; but there are several which may be taken as types of classes and models of treatment, not to dwell upon laborious trifles that stand entirely upon their own merits as such—as the, what we may term, landscape carving of M. Lionard, in pear-tree, representing sporting scenes* and a bear hunt; in

* Engraved in Cat., pp. 173-180, 202, 205, 206

† Engraved in Cat., p. 249.

Engraved in Cat., pp. 224, 226. ‡ Engraved in Cat., p. 226.

§ Engraved in Cat., p. 260.

¶ Engraved in Cat., p. 262.

** Engraved in Cat., p. 275.

* Engraved in Cat., p. 74.

† Engraved in Cat., p. 72.

THE EXHIBITION AS A LESSON IN TASTE.

exquisite finish. This is a class, as unappreciated to any direct use, and therefore quite secondary in our present object, which we must, with a few exceptions, generally pass over,—though such works are quite suitable for the ornamentation of mantelpieces or even clock-stands. But this is certainly not the class of labour that will either improve manufactures or advance taste, and may perhaps be not improperly termed laborious idleness. The English side exhibits its share of such things; but we do not include among them Mr. T. W. Wallis's two groups of birds, notwithstanding the tasteful and elaborate finish, they may rival anything in the Exhibition.

A very prominent feature in French wood-carving is the skilful adjustment of the relief to the situation or use of the object decorated; and, further, the generally very careful grouping of the details, so as to enable them, as it were, by their position, to provide their own protection against injury: both qualities, in fact, tend to one and the same end—the preservation of the work. This is beautifully illustrated in a large frame, in the nave, carved in pear-tree by M. Lecheze, in the Cinquecento taste; though the relief in this work is comparatively low, all the numerous details are sufficiently detached and prominent; but, notwithstanding the delicacy and number of these details—vine-tendrils, foliage, snakes, birds' nest, &c., the artist has never once lost sight of the durability of his work: this frame will bear dusting without danger—an assertion which we would not hazard with respect to many similar works of English manufacture. There is the same judicious degree of relief in the magnificent sideboard by Fontaine—all the various groups of fruit, fish, or implements, are so arranged as to be of mutual protection to each other, and are tolerably secure against any ordinary accident, which is a virtue the more estimable in proportion to the value of the article.

This great French sideboard* is in every respect one of the noblest works in the Exhibition: its decorations are completely typical of the relations of the uses of the object. The entire food of man, both meat and drink, and the means and localities by and from which it is procured, are all charmingly expressed, and disposed in exquisite ornamental symmetry.

The style is Renaissance, of noble design, and of a strong Cinquecento feeling: in the upper part, agreeably interspersed with architectural features, is Ceres, with the inextinguishable horns of Amalthæa, one on either side, as the centre group; the side groups of boys and fruit have reference respectively, one on the right to the harvest, and on the left of the centre, to the vintage. Below, on the right hand, is a terminal figure representing fishing, with a group still lower, showing the locality, or source of the operation implied; on the other side is a corresponding figure, representing the chase, with its illustrative group below indicating the woods as the seat of game. In the front of the sideboard are allegorical figures of Europe, Asia, Africa, and America, with characteristic attributes in the province of food and drink, and further, each figure is illustrated by panels containing the fruits or products of the four quarters, with the implements of their acquisition grouped with them. All these panels are exceedingly effective: and just above the board itself is a magnificent group of game and fish, &c., of several kinds, most admirable in its arrangement, and satisfactory in its execution; beneath the board in front are four large stag-horns, in couples, reposing, arranged symmetrically and firmly before four bracket-trusses; the mouldings, and other details, are all valuable specimens of the Cinquecento Renaissance. The dogs, by their formal position immediately under and before the trusses, appear, on a careless view, to support the sideboard on their heads; but this is done by the curved trusses above and behind them; were it not so, this would be a capital error of material consequence in so magnificent a work; the very formal position of these dogs, however, is, perhaps, the only weak portion of the design.

On the whole, this work must be admitted to be an extraordinary masterpiece of wood-carving; and the idea of making a sideboard express at once in so palpable a manner, the fruits of the four quarters of the Globe, and the four seasons, with the means and manner of their gathering, is as happy and intellectual as comprehensive. The picture, however, in the centre, is much too light

and clear in colour for the tone of the wood, to which it gives a dirty appearance.

There are many other first-class cabinets, book-cases, and others, exhibited by French manufacturers, but almost exclusively in the styles of the Renaissance, which it is high time for the French to vary; to the English eye they are fresher; among these are conspicuous the medal cabinet of M. Ringuet-Leprince in ebony and pear-tree, ornamented with stones; a somewhat similar case by M. Tahan,† in a fine Cinquecento taste; and several elegant book-cases by Messrs. Durand,‡ Krieger, Leclerc, and Cordonnier, in oak, rosewood, and mahogany: besides several billiard-tables of a magnificent character, as one enriched with hohl-work by M. Boissardet; and some fine chairs, Caneppens, Louis Quatorze, and Louis Quinze, by MM. Rivart and Aubrioux, and M. Verge.

M. Cruchet exhibits some remarkable specimens of carving for room decoration, but displays the same mannerism in taste, which detracts seriously from the merit of the French contributions to the Exhibition; and this artist shows far greater skill in the execution of his work, than in its distribution; the specimen exhibited is excessively overloaded with detail; but it contains, perhaps, the best example of mere wood-carving in the Exhibition, in the two groups of fruit and game hanging from the brackets of the lower portion; the upper part is chiefly in carton-pierre, which, with some specimens exhibited by M. Harcourt, are good examples of the application of this material to something more than mere picture-frames or mouldings. M. Harcourt exhibits a very excellent frieze-sculpt, containing a boat-burial and other sport, in the Cinquecento taste.

Of the more delicate French work we must not omit to mention a group of the "Virgin and Child," by M. Knecht, of Paris; it is placed in a niche, which is adorned with a canopy of a rich Gothic character of design, but composed of the vine, treated after the manner of the German stamper, or knüttel treu,‡ a taste not much expressed in the Exhibition,* though of this class there are two magnificent specimens in solid metal-work, a cabinet and chair, in the German octagon room, exhibited by F. X. Fortner, of Munich.

Before passing to the English furniture, there are some specimens of general decoration in carving, or analogous work, in the Nave and in the Fine Arts Court, which demand our notice; in this court are also some of the most delicate specimens of English carving, as the Birds by T. W. Wallis, of Louth; and the Cradle exhibited by Her Majesty, carved by Mr. Rogers, from a design by his son; and a case containing some elegant Renaissance specimens by the same carver.**

The cradle in Turkey boxwood contains much admirable carving, and the scrolls are in the taste of the best Cinquecento scroll-work; this is altogether the best specimen of Mr. Rogers's carving. Many of the others, more particularly the large frames, are overcrowded, and have a more general effect that might be produced with very much less labour, and in a more durable form, as in the works of Grising Gibbons. That practical quality of relief which we had occasion to praise in some of the French works, is here absent. However, much of the superiority of the cradle, as also of a Cinquecento bracket and canopy, flowing purely to the excellence of the design, and it is another illustration of the paramount value of taste, with which no mere mechanical skill can ever come into competition. There are some good specimens here also by J. Mitchell, and by C. De Groot, of Dublin. The so-called Kendalworth buffet,†† by Cooke & Sons of Warwick, is a massive and handsome piece of furniture, but it suffers materially in effect by the purely dramatic treatment of the figures, and the consequent sacrifice of symmetry; for which we have only a very feeble expression of a doubtful idea:—Ornamental Art, to be perfect, must engross the whole ability of the designer, it admits of no division of attention.

The leather drawers, and reliqu hangings,‡‡ by Equilant, and Leske & Co., are very excellent examples of a style of ornament or decoration which might be infinitely more developed than it has

* Engraved in Cat. p. 305. † Engraved in Cat. p. 325. ‡ Engraved in Cat. p. 351.

§ Engraved in Cat. p. 305. ¶ Engraved in Cat. p. 325.

** Engraved in Cat. pp. 305-10. †† Engraved in Cat. p. 325.

‡‡ See specimens in pp. 30 and 31 of Cat.

THE EXHIBITION AS A LESSON IN TASTE.

hitherto been; stamped leather hangings were an important feature of the decorations of the middle ages, and even of the Cinquecento period; to book-binding, of which Leake & Co. exhibit some excellent examples, it is particularly applicable.

There are here exhibited some very chaste and delicate specimens of decoration by J. W. Ingram of Birmingham, in white enamel and gild, gilt wood-carving, with ornate mouldings; and also some very elegant Cinquecento arabesques for pilasters. The enamelled door, on deal, with the gilt mouldings and painted figures in the centre of the panels, has an exquisite effect, and for which it owes much to its simplicity; the enamelled Commode in deal, with gilt Renaissance scrolls in carved wood, is likewise a chaste and simple piece of furniture.* This is a style well calculated to display the finest delineation of design.

This court also contains many well-exposed efforts for carpets, table-cloths, and others, by the students of the Government School of Design, Somerset House.

On the north side of the transept are many elaborate specimens of furniture from the provinces, but few are distinguished for any thing beyond profusion of detail; the styles of decoration being mostly of that class we have termed natural, that is, with no definite idea, or of the Louis Quinze. Some good exceptions are a frame by A. Hild, Bamberg; a black oak chair by Collins, Doncaster;† and a bog-oak chair by Curran and Sons, Limerick, Ireland.

The works in carton-pierre, or papier-mâché, by Jackson & Sons,† and Bielefeld, show well the great extensibility of the material. But still more remarkable capabilities are displayed in the specimens exhibited by the Dutta Percha Company;‡ the discovery of a "non fragile pendant" is doubtless of the highest value in Decorative Art; and the specimens of Herts, &c., in imitation of bronzes, show its almost universal applicability for decorative purposes. Some gilt specimens are exhibited by Thorn & Co.; and its advantages over wood or composition, and other materials used for picture or looking-glass frames, considering its ductibility and comparative indestructibility at once, must be almost incalculable in all delicate work.

The specimens of Jordan's machine-carving are another promise of the unextinguished facilities of the coming age in all mechanical resources, and if we can but establish the essential quality of all decoration, taste, the rising generation will have nothing to fear from the rivalry or the prestige of past ages. These specimens of machine-carving, the most delicate touches only being given by the hand, are quite equal to the general average of that executed wholly by hand; and where many examples of one design are required, as in church-carving, the saving of labour and expense must be enormous. The colossal gilt looking-glass frame and console-table by M-Lean in the western avenue, is an extraordinary piece of carving and gilding, and it only for size; but this appears to us its worst feature; the intent, however, of the designer is well expressed. The forms and groups are Renaissance in spirit, and thoroughly Louis Quinze in treatment, but the merits of the design would have been more conspicuous had it been executed on a smaller scale; the parts by their great size are separated and viewed successively, while the nature and execution of the design demand a simultaneous view of the whole. This is an important point in Decorative Art; where a design is seen only in detail, the details themselves should have an individual completeness independent of what they contribute also to the general effect.

The London furniture-court contains many fine examples of decoration and carving, and exhibits, except perhaps pottery alone, on the whole, better average taste than any other branch of English manufactures; though in comparison with some of the French examples, not taking into consideration the greater variety of style, none can be instanced as remarkable specimens of carving.

The work of greatest pretension in the collection is certainly the book case, or side of a room, exhibited by Holland & Sons, from designs by Marquet;§ the ornamental details are in the Cinquecento taste, and are beautifully executed, but as a whole the design expresses much more the feeling of the ordinary Renaissance, notwithstanding the absence of the cartouches and strap-work;

the somewhat Moorish feeling of the tracery of the doors supplies the place of the latter.

Mr. Levis's sideboard, opposite to this great work, is a better example of the Cinquecento, and certainly also one of the finest pieces of English furniture in the Exhibition, though it is not pure in style, and is weakest in its most prominent details; the large scroll with nymphs and satyrs, is confused and heavy; there is too much leaf, and too much uniformity of shape in the leaf, and it shows too little ground; the figures also admit of much improvement. The smaller scroll-work is excellent; and a very good general effect is produced by the variety of woods. Messrs. Johnstone & Jones also exhibit a sideboard in the Cinquecento taste.* The boldest specimen, however, of this style, Roman in its taste, is the magnificent sideboard, in walnut, in the south-west gallery, by Henry Hayles, of the Sheffield School of Design;† near this is also a fine Cabinet, in the same style, by Arthur Hayball, likewise of the Sheffield School of Design.‡

J. Thomas, further exhibit the side of a room, in Cinquecento; and Morant, of Bond Street, exhibits some similar decoration, and furniture,§ altogether in excellent taste; and the same feeling prevails in the contributions of Snell & Co., Albemarle Street. It is highly gratifying to see the decided progress this most limited taste in design is making with our manufacturers, and those who still adhere to the Rococo Louis Quinze, or vague natural groups without design, will do well to compare their own contributions with those we have selected as evidence of a more cultivated taste.

Our catalogue of good works, however, does not end here; as in most other parts of the Exhibition, here too, the Renaissance has occupied some of the best skilled hands, and we have some good specimens of the Elizabethan, our version of the Renaissance.

This collection of furniture may be of some aid to us in pointing out more nearly the distinction of these styles which we have already spoken of generally. It shows sufficiently well for an understanding of the distinctions, that the very popular Renaissance, so characteristic of the present day, is virtually a combination of the Cinquecento and the Elizabethan, or, perhaps, rather, that the two are a very judicious separation of the incongruous elements of the Renaissance into its two distinct expressions of forms. The Cinquecento we have pointed out; the Elizabethan are the sideboard, by Caldwell;|| the isolated by Darley & Co., and the bookcases and very elegant sideboard by Jackson & Graham;‡ but the last is of mixed style rather, especially in the lower portion. Of the mixed style the examples are more numerous and decided, though not so well expressed as in foreign examples; as the magnificent bedstead by Rogers & Dear;§§ another by Dowbiggin & Co.; the sideboard by Trullope & Sons;¶† a sideboard and cabinet by Hester, and some chairs by Gillow and Hunter; the last exhibits two of the most elegant chairs in the Exhibition,|| one of a Louis Quinze character. The sideboard exhibited by this house is elaborately executed, but the legs are in position, shape, and design, extremely objectionable.¶‡ A natty, or airy figure proceeding from the comanoglia or Amalthus's horn, is not a happy idea; and as the horn in this instance terminates in a dolphin's head, we have the very great anomaly of a figure with a head at both ends, and made use of as a leg; and in addition expressing weakness in its very form.

A sofa by Gillow is open to a similar objection; the leg is of a winged griffin, with one large foot, out of all proportion to the figure; the very disagreeable effect produced might have been avoided by the simple contrivance of giving it two feet of proportionate size. A simple green sofa, by Jackson & Graham, with a species of crystal terminal figure of elegant design, applied to the same use, is in very superior taste; the same house exhibits a very beautiful chair in the Louis Quinze style.||| Fraits, of Bond Street, exhibits a commode which is a fine example of both work, in tracery of a very tasteful Louis Quinze design. And there is much good marquetry, or similar work, in inlaid wood, but we have not space to specify examples. Hancock & Sons exhibit some delicate wood-carving for frames.

* Engraved in Cat. p. 312. † Engraved in Cat. p. 303. ‡ Engraved in Cat. p. 307. § Engraved in Cat. p. 308. || Engraved in Cat. p. 309. ||| Engraved in Cat. p. 310. ¶ Engraved in Cat. p. 311. ¶‡ Engraved in Cat. p. 312. ¶‡ Engraved in Cat. p. 313. ¶‡ Engraved in Cat. p. 314. ¶‡ Engraved in Cat. p. 315. ¶‡ Engraved in Cat. p. 316. ¶‡ Engraved in Cat. p. 317. ¶‡ Engraved in Cat. p. 318. ¶‡ Engraved in Cat. p. 319. ¶‡ Engraved in Cat. p. 320. ¶‡ Engraved in Cat. p. 321. ¶‡ Engraved in Cat. p. 322. ¶‡ Engraved in Cat. p. 323. ¶‡ Engraved in Cat. p. 324. ¶‡ Engraved in Cat. p. 325. ¶‡ Engraved in Cat. p. 326. ¶‡ Engraved in Cat. p. 327. ¶‡ Engraved in Cat. p. 328. ¶‡ Engraved in Cat. p. 329. ¶‡ Engraved in Cat. p. 330. ¶‡ Engraved in Cat. p. 331. ¶‡ Engraved in Cat. p. 332. ¶‡ Engraved in Cat. p. 333. ¶‡ Engraved in Cat. p. 334. ¶‡ Engraved in Cat. p. 335. ¶‡ Engraved in Cat. p. 336. ¶‡ Engraved in Cat. p. 337. ¶‡ Engraved in Cat. p. 338. ¶‡ Engraved in Cat. p. 339. ¶‡ Engraved in Cat. p. 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554. ¶‡ Engraved in Cat. p. 555. ¶‡ Engraved in Cat. p. 556. ¶‡ Engraved in Cat. p. 557. ¶‡ Engraved in Cat. p. 558. ¶‡ Engraved in Cat. p. 559. ¶‡ Engraved in Cat. p. 560. ¶‡ Engraved in Cat. p. 561. ¶‡ Engraved in Cat. p. 562. ¶‡ Engraved in Cat. p. 563. ¶‡ Engraved in Cat. p. 564. ¶‡ Engraved in Cat. p. 565. ¶‡ Engraved in Cat. p. 566. ¶‡ Engraved in Cat. p. 567. ¶‡ Engraved in Cat. p. 568. ¶‡ Engraved in Cat. p. 569. ¶‡ Engraved in Cat. p. 570. ¶‡ Engraved in Cat. p. 571. ¶‡ Engraved in Cat. p. 572. ¶‡ Engraved in Cat. p. 573. ¶‡ Engraved in Cat. p. 574. ¶‡ Engraved in Cat. p. 575. ¶‡ Engraved in Cat. p. 576. ¶‡ Engraved in Cat. p. 577. ¶‡ Engraved in Cat. p. 578. ¶‡ Engraved in Cat. p. 579. ¶‡ Engraved in Cat. p. 580. ¶‡ Engraved in Cat. p. 581. ¶‡ Engraved in Cat. p. 582. ¶‡ Engraved in Cat. p. 583. ¶‡ Engraved in Cat. p. 584. ¶‡ Engraved in Cat. p. 585. ¶‡ Engraved in Cat. p. 586. ¶‡ Engraved in Cat. p. 587. ¶‡ Engraved in Cat. p. 588. ¶‡ Engraved in Cat. p. 589. ¶‡ Engraved in 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661. ¶‡ Engraved in Cat. p. 662. ¶‡ Engraved in Cat. p. 663. ¶‡ Engraved in Cat. p. 664. ¶‡ Engraved in Cat. p. 665. ¶‡ Engraved in Cat. p. 666. ¶‡ Engraved in Cat. p. 667. ¶‡ Engraved in Cat. p. 668. ¶‡ Engraved in Cat. p. 669. ¶‡ Engraved in Cat. p. 670. ¶‡ Engraved in Cat. p. 671. ¶‡ Engraved in Cat. p. 672. ¶‡ Engraved in Cat. p. 673. ¶‡ Engraved in Cat. p. 674. ¶‡ Engraved in Cat. p. 675. ¶‡ Engraved in Cat. p. 676. ¶‡ Engraved in Cat. p. 677. ¶‡ Engraved in Cat. p. 678. ¶‡ Engraved in Cat. p. 679. ¶‡ Engraved in Cat. p. 680. ¶‡ Engraved in Cat. p. 681. ¶‡ Engraved in Cat. p. 682. ¶‡ Engraved in Cat. p. 683. ¶‡ Engraved in Cat. p. 684. ¶‡ Engraved in Cat. p. 685. ¶‡ Engraved in Cat. p. 686. ¶‡ Engraved in Cat. p. 687. ¶‡ Engraved in Cat. p. 688. ¶‡ Engraved in Cat. p. 689. ¶‡ Engraved in Cat. p. 690. ¶‡ Engraved in Cat. p. 691. ¶‡ Engraved in Cat. p. 692. ¶‡ Engraved in Cat. p. 693. ¶‡ Engraved in Cat. p. 694. ¶‡ Engraved in Cat. p. 695. ¶‡ Engraved in Cat. p. 696. ¶‡ Engraved in 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875. ¶‡ Engraved in Cat. p. 876. ¶‡ Engraved in Cat. p. 877. ¶‡ Engraved in Cat. p. 878. ¶‡ Engraved in Cat. p. 879. ¶‡ Engraved in Cat. p. 880. ¶‡ Engraved in Cat. p. 881. ¶‡ Engraved in Cat. p. 882. ¶‡ Engraved in Cat. p. 883. ¶‡ Engraved in Cat. p. 884. ¶‡ Engraved in Cat. p. 885. ¶‡ Engraved in Cat. p. 886. ¶‡ Engraved in Cat. p. 887. ¶‡ Engraved in Cat. p. 888. ¶‡ Engraved in Cat. p. 889. ¶‡ Engraved in Cat. p. 890. ¶‡ Engraved in Cat. p. 891. ¶‡ Engraved in Cat. p. 892. ¶‡ Engraved in Cat. p. 893. ¶‡ Engraved in Cat. p. 894. ¶‡ Engraved in Cat. p. 895. ¶‡ Engraved in Cat. p. 896. ¶‡ Engraved in Cat. p. 897. ¶‡ Engraved in Cat. p. 898. ¶‡ Engraved in Cat. p. 899. ¶‡ Engraved in Cat. p. 900. ¶‡ Engraved in Cat. p. 901. ¶‡ Engraved in Cat. p. 902. ¶‡ Engraved in Cat. p. 903. ¶‡ Engraved in Cat. p. 904. ¶‡ Engraved in Cat. p. 905. ¶‡ Engraved in Cat. p. 906. ¶‡ Engraved in Cat. p. 907. ¶‡ Engraved in Cat. p. 908. ¶‡ Engraved in Cat. p. 909. ¶‡ Engraved in Cat. p. 910. ¶‡ Engraved in Cat. p. 911. ¶‡ Engraved in Cat. p. 912. ¶‡ Engraved in Cat. p. 913. ¶‡ Engraved in Cat. p. 914. ¶‡ Engraved in Cat. p. 915. ¶‡ Engraved in Cat. p. 916. ¶‡ Engraved in Cat. p. 917. ¶‡ Engraved in Cat. p. 918. ¶‡ Engraved in Cat. p. 919. ¶‡ Engraved in Cat. p. 920. ¶‡ Engraved in Cat. p. 921. ¶‡ Engraved in Cat. p. 922. ¶‡ Engraved in Cat. p. 923. ¶‡ Engraved in Cat. p. 924

THE EXHIBITION AS A LESSON IN TASTE

We must now pass rapidly over the remaining objects, which come under the class of carving, modelling, or inlaying, exclusive of metal. To these belong the Italian ornamental mosaics, of which Rome sends a beautiful table, by the Cav. Barbori; and a magnificent example of this species is exhibited by Speluzzi, of Milan, in metal, wood, and pearl, but in the taste of the Louis Quinze; this is in the Milanese room, containing a painted ceiling by Montanari, and the plaster mantel-piece and frame by Giuseppe Botticelli, both effective, and the latter an admirable example of the Renaissance, and more complete than any of the English carving. The same may be said of the similar piece in marble by Leclercq, in the Belgian division, which is a still more valuable example of style, and, perhaps, on the whole, the best work of its taste and class in the Exhibition.*

Mosaic and marquetry seem to be especially the province of Italy, or, rather, the relative proportion of this class to others is unusually great in the Italian specimens from Rome and Tuscany, among which is conspicuous the table in Pietra Dura, by Bianchini, from the Royal Factory of this branch of industry at Florence; also a beautiful agnola table, by the brothers Della Valle, and many other specimens of merit. There appears to be something very much more rational in these marquetry, pietra dura, or agnola examples, than in the laborious and minute mosaic specimens of Rome and other places, which seem to be valued infinitely more from the number of pieces they contain, than for any intrinsic merit of an ornamental quality. One hundred handsome tables in any of the above three styles might be produced with less labour and at less cost, perhaps, than a single one of these extravagant trifles.

Mr. Stevens' glass mosaics, after the manner of the old Byzantine mosaics, are another example of a style in which many beautiful works might be produced at a comparatively small cost. It is, however, a matter of congratulation that the examples of inordinate waste of labour over trifles, such as was so very characteristic of the middle ages, in their manuscript illuminations and others, are very few in the Exhibition. The "Chinese ivory ball, containing fifteen separate balls," is now known to be no curiosity at all, but a very simple specimen of machine carving or turning. Curious ivory carving seems to be now almost limited to the East, and it is still more curious than beautiful, as the ivory thrones, or chairs, and footstools, in the Indian collection, which does not exhibit one well expressed form either in the design or the execution.

Of European ivory carving a fine Gothic pokal is exhibited by C. Frank of Fürtz, with illustrations from the *Lay of the Nibelungen*; a rich vase by Heyl, of Darmstadt; another goblet with lacchana, by M. Hagen of Munich; and several specimens, including another large cup, by Geismar & Co., of Wiesbaden. R. C. Lucas, on the English side, exhibits some very minute and elaborate copies of old pictures in ivory, which must be classed among the curiosities of carving.

Of Indian carving, which demands a few words, the specimens are not all of one description; some carved chairs and other furniture in black, and sandal wood, from Bombay and Madras, show a strong European character, vine-scrolls in exact Gothic or Byzantine forms; an ebony screen from Madras has even a Cicerone character in its elements, though not in treatment; but the Byzantine of the middle ages is the prevailing taste. A more national character is displayed in the minute details of some of the small boxes carved in various woods, and the samples of this class exhibited by Mr. C. W. Beale, are the best specimens of Indian carving exhibited; they have the same general effect arising from a mass of minute detail which characterises most Indian work, but they display good general design, and are carefully and uniformly executed.

Some excellent general decoration has been applied to book-binding by Messrs. Leighton, Westley, Mosconie, Barritt & Co., Tarnant, and others, on the English side; and by Hainey of Belgium, Leisegang and Schöning of the German Zollverein; and by Gravel, Lortie, and Naudou, of France.

VI.—Brasses, Hardware, &c.

Ornamental bronzes constitute a very small portion of the Exhibition, which, considering the great fitness of the material to many articles of constant use, is somewhat remarkable. This is however greatly owing to the introduction of several new materials applicable to the uses which have been hitherto reserved as in the special province of bronze; as for instance, cast-iron, bakstons, and various ornaments for the writing table or mantel-piece, which are now made in zinc, iron, or gutta-percha.

Some fine examples of purely ornamental bronzes are exhibited by M. Barbodienne, of Paris, including small copies of the celebrated gates of the Bapineiry of Florence by Lorenzo Ghiberti; and the various reliefs and ornaments of these gates, with some bronzes from the Medici monument by Michelangelo, are very skilfully applied as the decorations of a large ebony book case, in the style of the Renaissance, constituting a magnificent piece of furniture, and one of particular interest as actually containing the most celebrated genuine works of the Italian Revival. Some of the bronzes also exhibited by Villeneuve of Paris, are likewise genuine examples of this interesting period of Art, but in the pure Cinquecento style, being copies of the shield and helmet of Francis I., the originals probably genuine Milanese work. The large ewer and basin, gilt, which we have already mentioned, on this stall, is an adaptation of the details of these beautiful pieces of armour. In the French bronzes generally, there seems to be something exceedingly trifling in the designs; whilst and exhibits prevailing in the purely fancy pieces, as those of M. Calé, and gilt and confusion disfiguring nearly all the candlesticks. The Art-groups of M.M. Vitton and Sime, and the animals of M. Nibis are excellent, but the candlesticks, generally, are of a very cumbersome character; species of conventional trees, with knights taking shelter under them; altogether puerile in design. And the specimens of M.M. Miroy, Bayer, and Lerolle are disfigured by the same bad taste and confusion of parts. The articles exhibited by M. Maffiat are distinguished for much better taste, a chaste pair of candlesticks of a Greek pattern on this stall, are attractive through their pure simplicity amongst so much extravagance. A fountain exhibited by this manufacturer is also a beautiful though fanciful design.

The trophy seems to be the leading idea in many of the best French Candlesticks; a remarkable pair of this class is exhibited by M. Marechal. We find the same objection to the clocks; the majority are over-crowded and many are outrageous designs; this is the more to be regretted as the modelling is generally good, and the casting almost always excellent, but the effects are often destroyed by plating and gilding, or the mixing of ornate portions with the bronzes. Of Art-bronzes the groups of M. Jaquet of Schaerbrook, Brahm, are perhaps the best in execution.

The contributions of Mr. Potts of Birmingham, are distinguished most conspicuously for their elegant and varied taste. We have here candlesticks and chandeliers admirably expressed, in several of the most studied historic styles, as the Classic, Gothic, Renaissance, and Cinquecento; and there are several good lateral designs.

The Apollo and Daphne chandeliers, though in French taste, may safely challenge on its own merits any of the French specimens; the old fable is most happily made use of, but the idea is a painful one. Messenger & Sons of Birmingham likewise exhibit some well understood forms in bronze and ormolu, in Greek, Roman and Gothic taste; a Greek scroll for a gas-bracket is of a very elegant design. The bronzes of Messrs. Elkington, Mason & Co. of Birmingham, are also highly creditable to their taste, and by their perfect execution are a strong inducement for the electro process by which they are executed. The Hours Clock-Case, by John Bell, is in design and execution a fine specimen of ornamental bronze; and we have in the oak sideboard by John Guest, a similar application of bronze as decoration on the book-case by M. Barbodienne, and with the extraordinary facilities which the electro process offers for the production of beautiful

* Engraved in Cat. p. 227.

† Engraved in Cat. p. 265.

‡ See specimens in p. 265 of Cat.

§ See Table Top, Engraved p. 265 of Cat.

¶ See specimens in p. 265 of Cat.

‡ See specimens in p. 265 of Cat.

* Engraved in Cat. p. 219.

† Engraved in Cat. p. 219.

‡ See specimens in p. 219 of Cat.

§ Engraved in Cat. pp. 265, 266.

¶ Engraved in Cat. pp. 219, 220.

‡ See specimens in p. 219 of Cat.

THE EXHIBITION AS A LESSON IN TASTE.

and durable designs, we may hope to see a comparatively new order of decorative furniture; and if produced at a moderate price, a widely extended one, which might be the means of effectively multiplying and publishing the various master-pieces of past ages; and of this valuable application of the process a very fine example is here exhibited in the reduced copy of the *Thésaurus* by Mr. Chevert, for the Arsenal Society. A cast from an original by Fiumingio is another instance of this application; its sphere is boundless if not negated by outlines—however this may be for a time, the galvanic-plastic art is destined eventually to perform a great part in the dissemination of taste, and in general education.

J. A. Hatfield also exhibits some beautiful bronzes; and Wertheimer two very elegant ensembles in ormolu*.

The Coalbrookdale company also are distinguished contributors, and are evidently making great efforts to render their name and productions a sufficient guarantee for good taste; they exhibit several good designs by John Bell, C. Crookes, and R. W. Hawkins. But we could wish to see much more attention paid to the production of ordinary articles of use, as candle-sticks, ink-stands, and such works, embodying beautiful designs, than to deer, and dogs, or vases, or mere Art-groups, made simply to be gazed at. This is too much the fault of the French bronzes, and our ordinary grates are not of that beauty that we can afford to give all our extra efforts to burnished steel and electro-gilt, lacquered brass, or ormolu. This company exhibits a magnificent grate in these materials, somewhat in the taste of the Cinquecento;† but we have seen no good design applied to a simple cast in iron for this purpose; and here, in exception to the general rule, a French manufacturer, M. André of Paris, the exhibitor of the large Cinquecento fountain in the East nave, sets us a fine example, in his *Louis Quatorze* chimney-piece as a simple iron casting. Ornamental grates of this character are quite within the capabilities of iron and the province of good taste, and though London, Sheffield, Rotherham, and Coalbrookdale, disseminate in ornamental specimens of a costly description, indicating an immense advance of taste of late years, the idea of applying the finest design to a simple iron casting does not appear to have occurred to any manufacturer. One of the noblest specimens of this class is the grand *Massachusetts* grate, manufactured by Pierce of London, for the Earl of Elinor.‡ Evans of London exhibits also an elegant grate in the Cinquecento style; and Bailey & Sons also of London, another in the same style, of very elegant character, besides a beautiful piece of iron railing, in the Fine Arts Court.¶

The proportion of Cinquecento design in stove-work is unusually great; but the Renaissance and the *Louis Quatorze* are likewise sufficiently represented, and some of the latter style with its imperfections abounding. Johnson, of Sheffield, exhibits, with other good specimens, an elegant grate of this style. A stove, somewhat of Renaissance or Byzantine taste, is exhibited by Jackson, of London;|| W. S. Burton exhibits a fender with a good adaptation of a natural type, the snake, by J. W. Walton,* and several good common-sense grates are exhibited by Maggiorib & Low, of Birmingham. Hoole, Bolton, & Hoole, of the Green Lane Works, also exhibit some very good examples of the ornamental and practical combined.** Gorton, of Birmingham, and Deane, exhibit some elegant forms, also Glesdon & Co; Yates, Haywood, & Co; and Stuart & Smith, of Sheffield, who make by far the greatest display in this class of manufacture, comprising several good expressions of various styles—Cinquecento, Renaissance, and Gothic, besides some good simple specimens;†† showing altogether great efforts at effect, and not unsuccessfully ones: the combination of burnished steel, ormolu, and porcelain is very effective.‡‡

Of more purely ornamental iron-work, some of the Coalbrookdale specimens are very beautiful, not to mention the noble set of park gates, or the very elegant but somewhat large garden-house; and a very elegant iron vase in a Byzantine or Norman Renaissance taste, is exhibited by Mr. Handyside, of Derby;§§ another beautiful work, of a similar class, but more of a Fine Arts character,

is sent by the Berlin foundry, remarkable for the beautiful execution of a small copy of Thorwaldsen's celebrated "Triumphal Entry of Alexander into Babylon." And among the most tasteful works in the Exhibition, are the contributions in damascened iron by M. Fathies, of Liège, consisting of a shield, vase, and other articles in iron with Renaissance tracery, somewhat of the Cinquecento scroll-work and Heavy II. tracery combined, with Moorish arabesque inlaid in silver: the mixture itself of the two metals so combined, and the whole feeling of the design, produce a delightful effect, strongly recommending by its own merit this old style of decoration, which modern Europe has hitherto seemed disposed to resign to the East. The display of "Bodry work" from India comprises many beautiful vessels of this class, though not to be compared in workmanship with the contributions of M. Fallais. The Moorish details in these works, though superior, resemble the Indian, and the whole still presents another capital example of the value of the Moorish element in Cinquecento or Renaissance design.

There is also some excellent French iron-work exhibited by M. Potocail, of Paris; and a very interesting, though fanciful, iron bedstead by M. Dupont, of Paris;† and some others of more conventional character by M. Leonard, of Paris, in good Renaissance and Cinquecento taste. This is evidently a branch of manufacture to which iron castings are very applicable; it is an application of Art scarcely represented on the English side, except the costly brass specimens of Winfield, of Birmingham, who exhibits one magnificent bedstead of this description.‡

VII.—Pottery, Porcelain, and Glass.

In this department of industry, more especially in the province of uses, the contributions of British manufacturers show an immense improvement in design upon the ordinary standards of former years; the very long unvaried preeminence of the Meurs, Wedgwood in classical taste only proves how difficult it was to improve the mass of the master potters with even the belief in the real existence of such a Taste. The material property, however, of those who have taken the lead in cultivating this tardily acknowledged essential element of manufacture, must establish now and for ages the absolute necessity for its cultivation as one indispensable foundation of success.

To limit fine taste or design to such works as the more magnificent productions of *Sèvres*, which from practice we may assume to have been a rule, is a now admitted folly, which individual pecuniary interest, if no higher motive, is likely effectually to correct for the future. If in expensive productions the relative high price may be said to secure a return for the extra outlay consequent on employing higher talent, the same cause restricts the manufacture; and where the same high talent is employed over the low-priced article, the remuneration is secured by the increased attractiveness and consequent greater demand. This was formerly discredited, but the general movement of late years in this direction, encouraged by the increased facilities of education offered by the Schools of Design, have proved its practical reality; and we can but hope that nothing will deter our manufacturers from pursuing this enlightened course.

Form is the great element of pottery, porcelain, and glass, as applied to domestic uses, and should command the first consideration; a vessel, even should it have no other attraction than an agreeable shape, or, in other words, be wholly without decoration, may still be a beautiful and delightful object to the cultivated eye, and will itself eventually educate the uneducated. Shape is the element of beauty; decoration may enhance it, if judiciously applied, and may do much towards destroying it if had recourse to in too great proportion; but it is this more or less, which tests the quality of taste. We cannot illustrate better what we mean than by referring to the staff of Moors, Wedgwood, where we find only exquisite shapes just sufficiently decorated to enhance their effect. Though the designs of Flaxman for the most part, these are the revival of an old taste, or rather the utmost development of taste, after an interrupted education of many centuries; no parallel opportunity has ever offered itself to Christian Europe;

* See specimens in Cat. p. 66.

† Engaged in Cat. p. 116.

‡ Engaged in Cat. p. 120.

§ Engaged in Cat. p. 71, and a similar, p. 72.

|| See two examples in Cat. p. 35.

¶ Engaged in Cat. p. 125.

§ Engaged in Cat. p. 125.

|| Engaged in Cat. p. 72.

¶ Engaged in Cat. p. 71, and a similar, p. 72.

|| Eng. in Cat. p. 6.

* Engaged in Cat. p. 82, 83.

† Engaged in Cat. p. 13.

‡ Engaged in Cat. p. 364.

§ See specimens in pp. 14, 15, of Cat.

THE EXHIBITION AS A LESSON IN TASTE.

mere symbolism and religious dimensions have rendered it hitherto impossible. In comparing, therefore, the modern with the old, we compare the crude and unfinished productions of a divided attention, constantly interrupted by one whim or another wholly irrelevant to the purpose, with the last and crowning efforts of the most cultivated people of the ancient world, after the successive and undivided attention of whole generations of educated designers in the attainment of beauty.

Reproduce the idea of copying as we will, all our vigour and in a recurrence to Greek shapes. All the most beautiful forms in the Exhibition, whether in silver, in bronze, in earthenware, or in glass, are Greek shapes; it is true, often disguised by the necessary decorations of the modern styles, but still Greek in their essential form.

In adopting Greek shapes, we are not restricted to either Greek materials or Greek colours, nor are we limited to their details; but if their principles are true, we can but work upon them, and whatever variations we adopt there is sure to be a beautiful effect in the arrangement. If reproductions in the Greek taste have hitherto had a general monetary effect, it is because the materials themselves have been imitated, rather than the taste of form and decoration; let the materials and colours be properly varied, and all that sameness of effect which too often characterises these reproductions will disappear: it is sufficiently evident by a mere reference to silver, bronze, or glass, where the shape is the same, but where the idea of mere imitation or monotonous repetition never occurs.

Though the *Sèvres porcelain** takes the lead in point of pretensions, it is not superior in taste, and is certainly inferior in matters of utility, to the specimens of *Albertain Copeland*,† of *Stoke-upon-Trent*. We have in this stall much of that variety of classical models which appears to us to constitute the true use of these ancient remains, and the best evidence of a refined taste. There is besides on this stall such handsome porcelain of modern design, rich in decoration, without being gaudy; and in several styles, all well expressed, as the *Indian*, *Moorish*, *Cinquenote*, and the *Louis Quatorze*, and *Louis Quinze*; but the Greek justly prevails over all the others.

Minton & Co., also, of the *Staffordshire Potteries*, make likewise a magnificent display, especially in a desert service in *Parian* and *Porcelain* mixed, in turquoise, white and gold, purchased by Her Majesty.‡ The designs comprise many statues of an allegorical character, but in the ornamental details the *Louis Quinze* has been allowed to conspicuous part; the centre piece, a wine-cooler,§ is a good example of general skillfulness of treatment of relief, and of that class of design of which the ornamental details illustrate the uses, or ideas and customs, associated with the object of the design. On this stall is a beautiful *Cinquenote* ewer and basin, in *Parian*, which is one of the most tasteful specimens of this class of design in the Exhibition; and in much the same style is a magnificent masterpiece of exquisite design, but of more ordinary Renaissance character: many of its details, however, are admirable, as the scrolls and centre of the frieze; and the general style of the terminal pilasters, a symph and fan so adapted, in perfect in character, except that the lines or architrave is made to rest on the flowers which those figures carry in baskets on their heads, which, though not without a precedent, is an outrageous idea; the wreath round the heads of the figures would have made a better capital, and would have obviated this anomaly.

This firm exhibits also a pair of magnificent vases, of which the handles, in metal, are extremely beautiful; a ram's head, scrolls, cornucopia, and infant boys, ingeniously grouped into a convenient and ornamental handle-shape; and there are also some clever imitations in *Parian* of the delicate trifles of old Dresden china, in flowers and fancy figures, of the school of *Wattson*. The colours generally, and the ordinary services of this firm, are extremely good; and its economic sales are a very important contribution towards the general cultivation of Taste.

The *Louis Quinze* is still the prevailing style in porcelain, as in many other manufactures; and, generally speaking, profusion of

ornament is the rule. Much beautiful work, however, rich and simple, is exhibited by *Hilgway & Co.*,* whose conservatory fountain and stair rails are very agreeable novelties; also by *Alcock and Co.*, *Burslem*; *Messrs. Bost*, of *Burslem*;† *Meigh & Sons*, of *Hanley*;‡ *Dunsmack*, of *Shelton*; *Boss & Co.*,§ of *Coalbrookdale*; *Bell & Co.*|| of *Glasgow*; and *Granger & Co.*, of *Worcester*,¶ who contribute in their semi-porcelain some minor works in excellent taste.

The famed *Dresden porcelain* seems to exhibit the atrophy which not seldom is induced by a just consciousness of superiority at one time, ending in an assumed incontestable pre-eminence for all time; thus while other fabricators have steadily progressed, that of *Dresden* has unconsciously remained stationary, and its specimens are in the Exhibition merely to astonish us how it ever attained its former notoriety.**

There is, indeed, very little in German pottery or porcelain to attract attention. The *Berlin* specimens take the highest position; the *Austrian* is of a very original character, and the beer-mugs of *Neureuther*, of *Munich* porcelain,†† or the terra-cotta of *E. March*, of *Charlottenburg*||| or the stone-china of *Villeroy and Boch*, are among the most prominent German efforts in this class of industry.

England holds, perhaps, a still higher position in glass than it does in pottery or porcelain. Though the English manufacturers may yet find some difficulty in competing in cheapness with *Bohemia*, the *Islington glass-works* of *Rice, Harris, & Son*, of *Birmingham*,§§ seem to have surpassed this famed manufacture in every other respect; they exhibit an equal beauty of colour with the *Bohemian*, a general superiority of taste, and uniformly superior workmanship; and this notwithstanding *Bohemia* displays some very beautiful examples, for they often owe more of their beauty to their decoration than to their shape or colour. Many beautiful specimens also in coloured glass are exhibited by *Bacchus and Sons*||| by *Davis, Greathead, & Green*; and by *Lloyd and Summerfield*, of *Birmingham*.¶¶ It is, however, in pure white crystal glass that this fabric, now as of old, displays its highest sphere of beauty and usefulness, and in this department *Messrs. Osler*, of *Birmingham*, and *Apley Pellatt & Co.*, of *London*, besides numerous articles of ornament and domestic utility, exhibit some *enamel* chandeliers and lustres of unexampled magnificence, as displaying the reflective beauty of the metal; the wrought-iron crystal fountain in the centre of the building, and the very elegant *enamel* in the gallery, belonging to Her Majesty,***, by Mr. Osler; and many chandeliers, some of extraordinary size and magnificence, by Mr. Pellatt.††† Mr. Osler exhibits also some beautiful lustres, and some griffins, in *dread glass*, which have an excellent effect.

Mr. Pellatt exhibits a great variety of articles, both of use and ornament, in cut, engraved, and frosted glass, and curious imitations of *Venetian* frosted and gilt glass. The frosted glass, though it may be a revival of an old taste, is now not only a novelty, but has a unique and beautiful effect.

There are here, also, some baskets of great beauty, and by the partial hollowing of the drops, a very rich and uncommon effect is produced; the exquisite purity of the metal used is shown by some very interesting models of diamonds, among which is the *Kob-i-noor* itself, and nothing inferior in brilliancy to the original below. This stall contains likewise many beautifully engraved jugs and glasses, and many specimens of simply cut wine-glasses, of solid character and admirable design.

Messrs. Richardson, of *Stourbridge*, likewise make a magnificent display, comprising many wine-glasses and decanters of beautiful shapes, most tastefully cut and engraved;||| but the introduction of the painted or enamelled glass, appears to be an attempt at combining two antagonistic elements, the opaque and the transparent; the best of colours, not viewed as transparencies, must appear dull and even dirty, when compared with the brilliant reflections which constitute the chief charm of glass; and the specimens of

* Engraved in Cat., pp. 100, 101.

† Engraved in Cat., pp. 100, 101.

‡ Engraved in Cat., p. 100.

§ Engraved in Cat., p. 100.

|| Engraved in Cat., pp. 100, 101.

¶ Engraved in Cat., p. 100.

† Engraved in Cat., pp. 100, 101.

‡ Engraved in Cat., p. 100.

§ Engraved in Cat., p. 100.

|| Engraved in Cat., pp. 100, 101.

¶ Engraved in Cat., p. 100.

†† Engraved in Cat., p. 100.

††† Engraved in Cat., p. 100.

* Engraved in Cat., pp. 100, 101.
† Several fine specimens engraved in Cat., pp. 1-4.
‡ Engraved with other specimens, in Cat., p. 104. § Engraved in Cat., p. 100.

THE EXHIBITION AS A LESSON IN TASTE.

this new application of enamel here exhibited, are sufficiently dull in effect to be a warning against its repetition or imitation, except upon opal or opaque glass; and then it will always require great delicacy, and it is, to say the least, an aid that glass does not require. Of this, no stall is a better proof than Messrs. Richardson's own, which is conspicuous for its very beautiful crystal metal, delicate colours, and variety and general skillfulness of design. Stourbridge is further distinguished by the contributions of J. Webb, of Flax's Glass Works.

The stall of J. B. Green, London, displays, perhaps, the most delicate engraving in the Exhibition, and upon some of the most exquisite shapes; constituting another illustration of the accomplished finish of Greek forms. This judicious choice has resulted in the production of several jugs on this stall, which are exquisite works of Art; and the Greek details of the engraving of a portion of them has rendered these very adequate illustrations of Greek taste equally interesting with the Wedgwood specimens in earthenware, and of some value in showing the very different general effect produced by a simple change of material.

Much admirable work, also, is exhibited by Moliniaux, Webb and Co., of Manchester; Powell, Conne, Rose & Co., Naylor, Sharpe & Cullum, and others, all showing the high condition of this manufacture in England. Sharpe & Cullum exhibit some extremely handsome shapes for wine-glasses, white and coloured, plain and cut; some of them after the taste of the old Dutch glass; with green and purple bowls and white stems, and exhibiting the comparative novelty of plain bowls and cut stems, the bowls being tulip and chalice shaped, and the stems straight, polygonal, plain, and cut—although displaying a novel and noble effect. Of purely ornamental glass, coloured or etched, for windows or general decoration, there is also much that is new and of a high class, as the magnificent coloured slabs by Swinburne & Co., of Newcastle, with some admirable imitations of marbles; and the etched and painted glass of Coggs & Co. and the enamelled glass of Chance & Co., of Birmingham.

Some very tasteful and historical ornaments are displayed among the stained and painted glass by the Royal Patent Decorative Glass Works, S. K. Hand, Jackson, Hetley, and some very good Norman patterns by Wain of Newcastle; and some similar ornament; and other tasteful details in the lower frames of a figure window by Gibson of Newcastle.

Some curious Venetian glass is exhibited by P. Bigaglia; and, in other styles, by Hall & Sons of Bristol, and by the St. Helena Glass Company.

But in painted glass generally, the display is unaccountably small and insignificant, considering the character and capabilities of the Art; and the prevalent notion that glass-painting is peculiarly an economical province of decoration, unless shortly excluded, promises to be fatal to the Art, under the very restricted development which ecclesiastical prejudices are disposed to allow it in this country. The fine window by Bertini, of Milan, is a wholesome innovation upon such morbid pretence.

VIII.—Woven and Printed Fabrics.

This department of ornamental manufactures, though perhaps less generally attractive than many others, is of greater commercial importance than any, owing to its universal extent; and probably there is no class of manufactures which good design is better calculated to encourage than the infinite variety of pattern goods of this description, which, when the quality of the fabric itself is decided upon, must be in nearly all cases chosen for the pattern.

When, therefore, a general standard as regards the substance and texture of a fabric has been attained, which is pretty well the case with the woven goods of Europe at the present day, design becomes the sole field of competition. Even in this respect also one general average of merit is now pretty well attained, the excellence of French designs has at last forced other countries to turn their energies to the same province, and the vast strides of England in the last few years aided much by Schools of Design,

have been not without their rewards. In shawls, silks, damasks, lace, carpets, &c., it would be difficult to pronounce any decided opinion as to respective superiorities; we venture to assert, however, that Spitalfields silks are not inferior to those of Lyons; that no ribbon in the Exhibition can compare with the "Coventry ribbon,"* from a design by Mr. Clark of the Coventry School of Design; and that if the lace, damasks and carpets, of British manufactures are not decidedly superior to the similar productions of the Continent, they betray, certainly, no shadow of inferiority; in printed muslins, however, and in chintzes, and in shawls, we do not venture to claim that equality which we believe to be established in other branches.

The printed goods of Glasgow, or of Dalginish, Falconer & Co., of Stirling, may compare with those of Mulhouse; and of the English prints generally, those of Thomson, of Clitheroe, come, perhaps, nearest to their foreign rivals; the similar goods of Manchester, with some few exceptions by Hargreaves & Co., and Nelson, Knowles & Co., are heavy and stiff, and display too many browns and greys or lilacs; the trails are too close, and there is a want of flow in the curves; they are like the chopping sea of the North compared with the waves of the Atlantic. In damask, brocade, and embroidered silk, Manchester is far more successful; the contributions of Messrs. Holliday, and of Winkworth and Procter, are equal to anything in the Exhibition; and may, with the silks of Campbell, Harrison & Lloyd, of Spitalfields, compare even with the admirable specimens from Lyons, exhibited by Candy & Co., which to surpass would be almost impossible.

As a spur to our manufacturers it may be worth pointing out that the best of the Mulhouse prints exhibited, as well as other goods, are manufactured for London houses; a circumstance that can only possibly be accounted for by the superiority of design, and it shows that English ladies are judges of what is tasteful, if English manufacturers are not. Some of the most beautiful specimens exhibited by Koebelin, of Mulhouse, Gros Odier, Roman & Co., of Wasserburg, and several others, have been expressly manufactured for Howell & James, Sewell & Williams, & Sons of Bristol, Swan & Edgar, Lewis & Allenby, or Hiltcock & Co., of London. The Mulhouse prints are nearly all trails, no one colour particularly prevailing, as in the greys or browns of Manchester; there are some extremely small trails in pink and lilac, of great elegance; they are mostly on white grounds, but there are also blue, brown, green, pink, and drab grounds. The tints are generally delicate, and all large masses of colour seem to be systematically avoided; entirely opposite in fact to chintz patterns in their character, between which and these prints for dresses, the French manufacturers observe a very wide and very proper distinction. To fully particularise, however, in this vast range of fabrics, would occupy more space than has been allowed for the whole of this essay. The gauze tissues of Valin, of Paris, and similar fabrics of Bertrand, Gayet, and Demoussat, of Lyons, seem to leave little to be desired, and the same may be said of the cashmere prints of Depouilly, Biaux & Co., Choquetel, Damiron, and others.

The prints of Depouilly, Biaux & Co., for Candy & Co., are extremely beautiful, and as averring somewhat from the conventional Cashmere patterns, deserve more than a mere mention; they consist of light patterns of tropical foliage, and flowers in various colours, and in several of them the conventional shawl pice is wholly dispensed with, in others it is treated with great freedom. Similar patterns are exhibited by English manufacturers, and some of the prints of Messrs. Swinland of Crayford, fully rival the French; but they are in the same conventional style of Cashmere pattern, which it would seem our manufacturers, or rather the whole body of the manufacturers of the west of Europe, dare not deviate from. The introduction of the palm is nearly the extent of the variation of even the best French designs. Doubtless, gracefully grouped tropical plants or flowers, have an extremely beautiful effect, and may be most applicable for the shawl, which is more characteristic of Oriental than of European costume; but this much cannot be said in favour of that very peculiar figure which so very decidedly disfigures so many of these magnificent examples of manufacturing skill; it cannot be excused, for it

* Engraved in Cat., p. 70.
† Engraved in Cat., p. 70.

* Engraved in Cat., p. 85.

† Engraved in Cat., p. 85.
‡ Engraved in Cat., p. 72.

* Engraved in Cat., p. 15.

† See engraved specimen in Cat., p. 125.
‡ Engraved in Cat., pp. 107, 108.

THE EXHIBITION AS A LESSON IN TASTE.

cannot be explained, and, certainly, it does not recommend itself by any inherent beauty of shape. There are several *Spitalfields* patterns in the Exhibition, of tropical and European flowers,* which, if skillfully followed out, and enlarged in style, might, without any very extraordinary effort, be adapted into an appropriate filling for shawls, by scrolling in masses, and still allowing the corners to preserve some of their conventional character, as has been very well done in a shawl † exhibited by Mr. Bakely, of Norwich, without giving any prominence to the offensive pine; European and Indian details are combined, and the same has been done with good effect, by Towler, Campin, & Co., of Norwich. ‡ Many of the Indian specimens themselves, however, are wholly free from the pine, and have little of that conventionality which seems to be an indispensable characteristic in the west.

It is a somewhat remarkable fact, but the Exhibition clearly shows that the whole European shawl trade of the highest class, is engaged in the manufacture of a spurious article, the imitation of an Oriental fabric, so that European skill and taste are virtually withdrawn from this branch of manufacture; and this is the result of the love of ostentation, the reputation of possessing something rare and costly, without any reference to taste.

The whole cause of this state of matters is accredited to public prejudice, but it originated in the primary attempt at counterfeiting, and the result is, as the Exhibition shows, that there is now no choice, that Europe has not yet produced a genuine sample of one of the most important and at the same time most ordinary articles of female costume—it has yet to make its shawl. What is remarkable, however, there is much more variety of pattern in the genuine Oriental fabrics than in the European imitations, which aim almost exclusively at the counterfeit of the most elaborate specimens from Cashmere or Lahore, but these they leave far behind them as mere designs, though they are often inferior in colour, and generally of a much coarser texture. The oriental fabrics indeed, more especially from the British colonies, make a display in draperies which seems to gain rather than suffer by comparison with the similar productions of Europe; and this appears to be chiefly from the minute nature of Indian ornamental detail which precludes all possibility of those outrageous exhibitions which the fabrics of the west so incessantly display. The Indian shawls have two conditions at least, which are demanded by criticism, namely a general harmonious effect of the whole, and such a choice and disposition of detail that the part never interfere with the whole by attracting any particular attention to itself. Some Indian specimens are actually covered with the so-called pine, and yet it is so unobtrusive in its treatment that many or most people even would overlook its presence. And the simple and charming effect of the woven fabrics of India, shows how much may be accomplished with the simplest materials, that is of ornament, if only this one point, that the detail must be entirely subservient to the general effect, be attended to. These manufactures have a value which their mere materials could never give them, and yet as works of ornamental design themselves they belong in all other respects to the humblest class; the details are either diapers or scrolls of the rudest kind, or a simple trail, or the interminable pine, as we must call it, in which the original type is neither approached nor even intelligibly expressed; and it is far too irregular in its treatment to be admitted as a recognised conventional type.

Many of these pines remind us of the horns of plenty of the Romans and Byzantines; we have a treatment much resembling what we find also in the mosques of Cairo, a pair being arranged in symmetrical contrast; others again are so much elongated that they resemble the flag leaf, or the leaf of Indian corn. Mixed with this figure we occasionally find the palm or aloe, and even the anthemion and fleur-de-lis, but executed in the oriental manner of an infinite combination of minute portions of different colours, aiming at a purely general effect. There are however patterns from which it is wholly absent, as scarfs in silver and gold, and in colour; sometimes a simple diaper of a conventional bush or tree, or a mere geometrical figure with a scroll border;

sometimes an alternation of stripes and scrolls arranged diagonally, with a much larger scroll for the borders; the scrolls being invariably of a Byzantine character, such as we find these in the manuscripts of the middle ages; and like the decorations of Cairo, most probably having their source in Damascus, the common nursery of Mahometan art: the zigzag too is a common element in these Indian works.

The embroidered shawls of Ahmedabad offer some of the most varied examples of Indian design; one of these, a magnificent scarf, a blue centre with a red border, embroidered in gold, is a characteristic specimen of its class. The centre pattern is a diagonal succession of a flower in a wave-scroll, alternated with a mere succession of flowers in a uniform line; the broad border at the ends consists of three rows of pines one above another. In these pines is foliage interspersed with an animal and two birds; the birds look like the peacock or dove, and the vulture; the animal is something between a bull and a stag. The space around the pines is likewise covered with a trail of foliage, among which are an elephant, a lion, and the same two birds that are within the pines: the whole is surrounded by a border of a foliated serpentine. The same details spread over various kinds of manufactures; * the silver decorations of the iron vessels, the so-called "Biddur or Bedry work" are identical with the diapers and other details of the scarfs of Ahmedabad, or the Kiseeb or Brocade of Benares.

By far the finest specimens of works of Art are the large shawls from Cashmere and Lahore; though they are very much less showy, by the absence of the gold and silver embroidery or tissue, which constitutes the chief attraction of the majority, or even the people and tinsel which constitute the only merits of others.

The details of the Cashmere patterns are generally light pines, dispersed with considerable freedom, and a figure resembling the aloe or the tuft of leaves which grows from the top of the pine-apple; it may be supposed also to represent the palm-tree, and it sometimes looks like a vase of flowers, or like the Greek anthemion. The pines are rarely solid, but generally contain scroll-work, and all the figures are made up of infinitely small conventional flower forms, such as we see on a large scale in Turkish carpets, and certain colours are constant, and always of a clean pure character, even bright in themselves, but being dispersed in small quantities they have a very good effect, and it is worth noting that the red is generally embedded in green, a point which, in their imitations, our shawl-makers have overlooked.

The chief variety of effect produced in these shawls is by varying the predominant colours; for in all some colours prevail, and they further observe a good practice of following the great outlines of the pattern with white; that is, a delicate white fringe separates the details from the ground, which obviates a heaviness, which so much work would otherwise involve, without the white relief; this, too, is neglected in many imitations.

The shibboleth, bowditch, parashu, and such fabrics from India, are more decided in their details than the shawls; they show also a more decided European influence, and have much similarity with the specimens from Constantinople, many of the details of which are pure Byzantine ornaments, and it would be very remarkable were it not so.

On a gold embroidered saddle-cloth from Madras, and on a large parashu of similar character, we have an anthemion such as we have on the vases, and also a simple floral arabesque on the latter. Byzantine scroll-work is also the common feature of decoration of bowditch and elephant cloth, as it is of the horse-cloths of Constantinople; on one of these last a rich wave-scroll, with a bunch of flowers proceeding from the eyes of the scroll, in the reverse direction of the scroll, embroidered in gold on blue cloth, is a good design and a very elegant decoration.

The great features of Indian work are shown to be, by this exhibition, general richness of material and unobtrusiveness of detail: deprived of their richness many of the embroidered fabrics would have nothing left but their unobtrusiveness, for absolute merits of design are in most cases altogether out of the question; we often hear of the love of finery in Europe, but it is quite evident that it is only in the East where this taste is carried out in perfection.

* See specimens by Stone & Knapp, p. 148, and another by the committee of the School of Design, p. 193, and another by Benjamin & Son, p. 202 of Cat.
† Englewood in Cat., p. 205.

* See specimens in Cat., p. 20.

THE EXHIBITION AS A LESSON IN TASTE.

In comparing the spacious with the genuine Cashmères, we find the genuine more minute and delicate, more general, less showy, and inferior in design, yet by no means inferior in effect. The European Cashmères have often staring grounds, and sometimes, which has a very bad effect, a different coloured ground for each corner of the shawl; this, though it occurs, is rare in genuine work, but must be bad everywhere. We have also in the European shawls the same pattern without the slightest alteration, worked upon different coloured grounds; this exhibits a fundamental error in design; for instance, if a pattern be elaborated for a red ground, the pattern should display a predominance of green in the details, and the effect would be good; but if this same pattern be simply transferred to a blue or a yellow ground, the effect would be destroyed; yet this has been done in several instances by the most eminent manufacturers of France and Great Britain; the complementary colours must be observed in these matters if we desire beautiful and tasteful effects. In European shawls the pine is elaborated at nanca, while other Indian details are neglected. Our manufacturers further seem to have selected their colours from the sombre class of Turkey carpets; but to apply such colours to shawls, in which the details are so extremely minute, amounts to a total annihilation of colour in the finished work; the most brilliant hues when dispersed in such minute portions as Cashmere patterns display will scarcely retain a secondary degree of colour when worked up, and this choice of colour may in a measure account for the very great superiority of the shawls exhibited by Duche and, Deneiron and Baigny, which are of Indian workmanship, the workman probably using his own wools; but the patterns of these shawls are also superior, especially the contributions of M. Duché, though the French shawls generally are poorer in effect than the English; but their imitation is closer, their details are very good, and they are free from that staidness which ours too often exhibit. The Austrian shawls are quite on a general equality with French or British.

In lace and embroidery, and analogous work, the Exhibition makes no such display as to demand any detailed examination. A vast improvement has of late years been made in the character of English lace, especially that of Nottingham; but as yet it may safely be asserted, that high class design has been little identified with the manufacture of lace in any country.

The specimens exhibited by Mrs. Treadwin, of Exeter, and Mr. Gill, of Colyton, from designs by Messrs. Slocombe & Rawlings,* of the School of Design, Somerset House, are of a far higher order of taste than any others exhibited. Videcos & Simon exhibit some good specimens of French; but viewed with reference to design, the Exhibition really contains very little that is good.

In embroidered or sewed muslin, the case is very similar. A rich dress is exhibited by Brown, Sharps & Co., of Paisley;† and there are several good specimens of curtains exhibited by J. J. Sutter, of Böhler, in Switzerland.

The damasks of Dunfermline and Belfast make a more gratifying display; some of these exhibit a high class of design, on several manufactured by Mr. Andrews, of Belfast;‡ and here again we find the value of the School of Design, in the patterns of Mr. Mackenzie and Mr. Hain.§ The coloured cloths and damasks of Mr. Beveridge, of Dunfermline,|| display skilled and well-studied design.

Milligan's patent embroidered Alpacas are another class of manufacture displaying much beautiful design.

In another important fabric, carpets, English manufacturers make a very distinguished display, though the most essential feature, aesthetically, is uniformly disregarded, namely, that a carpet is made to be trodden upon. This is the great point from which every carpet designer should view his subject; let him put nothing down that a man would object to, or could not, tread upon. What does it serve us to study the theory of design, if we make no distinction between ceilings and carpets? We find here water-lilies floating in pretty pools, shady recesses, and overhanging branches, with pleasant little peeps of blue sky, or hillocks of flowers, and basket-beds of fruit, Rococo scrolls, or a spread of hippopotamus tusks; all strewn before us to be trodden upon. An

wall might a man counterfeit the bottomless pit, and expect people to walk into it, as thick to attain the approval of men of taste by such designs as these. But neither is a pot-pourri from Indian ceilings the kind of thing that is required; what is good for a ceiling cannot be good for a floor, where a decoration is made with the slightest reference to the use of the two structures.

These discriminations may be considered as mere rhetorical niceties; they are, however, important essentials of design, and may be made a valuable element in the cultivation of the mind, as well as the taste, if properly attended to.

The great feature required of a carpet is, that it express fitness; this was done very generally by the ancient and middle-age mosaic or quarry designs; and it is really not imposing any material limit to the subject if we exact this as a primary condition. Every species of foliage, or foliage, or even of fruit, may be rendered suitable by choosing the form only of the natural type, without any attempt at imitation of its actual appearance; its shadow rather than itself; in fact, a skia gram; all natural designs that go beyond the imitation of a natural floor is inadmissible for a carpet; those, however, we should soon exhaust, but conventional design never can be exhausted. There is besides something peculiar in imitating a floor for a floor; we have a good floor already in our wooden boards, and our object is to decorate this in so tasteful a manner, that it shall suggest comfort and elegance, without giving offence to the sense or perception.

The oil-cloths exhibited by Hare & Co., of Bristol; and Barnes,* and Smith, and Fisher, of London, show a far better perception of what is required for a floor than the carpets; there are, however, happily, some carpets which are of a very different character from those we have been referring to—as some of those manufactured by Gregory, Thomsons & Co., Kilmarock; Henderson & Widnell, Leamside;† Layworth & Co., London; Blackmore Brothers, Wilton; Tompkins & Co., Glasgow;‡ Cromley & Sons, Halifax; White, Son & Co., London;§ Dove & Co., Leeds; and Humphries and Sons, Kitley; and Brinton & Sons, of Kidderminster; still many of these are on thoroughly wrong principles of design; the majority of them being mere repetitions of ceilings or walls, and crowded with flowers and scroll-work in high relief. Some are, of course, less objectionable than others, and compared with the average of this class of patterns, the following are distinguished for beauty of design:—An Axminster carpet, with interlaced tracery and scroll work, and flowers, by Layworth and Co.;|| the worked carpet, from a design by J. W. Papworth, exhibited by Her Majesty; two tracery and Louis Quatorze scroll patterns, by Watson, Bell* & Co.; a tasteful panel carpet, with Roman and Cinquecento scrolls and natural flowers, by Morant; another, somewhat similar, red in roll and black, with Roman scroll-work of a magnificent character, by Tompkins and Co.; and a more simple specimen, by Gregory, Thomsons & Co., from a design by J. Lawson; a magnificent Louis Quatorze pattern, by Jackson & Graham; ** and a somewhat similar design, by Cromley & Sons. An extremely rich carpet of the same class is exhibited by the Royal Factory at Tournay; and the chief contribution of the Gobeline is likewise of the same description, containing much delicate work, but very much better fitted for a ceiling than for a floor, a judgment that might be justly passed upon most of these carpets, including also the large Windsor carpet, from Mr. Granger's design.

There are designs of another character which appear to us more appropriate:—the beautiful carpet manufactured by Layworth and Co. for Buckingham Palace;†† or the carpets in an Oriental taste manufactured by Blackmore Brothers, for Watson, Bell & Co., from designs by Messrs. Arberthorpe & Orab; and if natural foliage or flowers are essential to some tastes, they should perhaps be rather dispersed with a more studied carelessness, than in systematised groups, as in a diaper or trail, or spread over the surface as in the fern-pattern|| manufactured by Henderson & Widnell, for Turberville, Smith & Co., from a design by Mr. E. T. Parris. The colouring of this last carpet is extremely good, the tints being the three tertiaries—rue, citrine, and olive; and no colours

* Engraved in Cat., p. 145.

† Engraved in Cat., pp. 105, and 106.

‡ Engraved in Cat., p. 44.

§ Engraved in Cat., pp. 54, 55.

* Engraved in Cat., p. 214.

† Engraved in Cat., pp. 30, 31.

‡ Engraved in Cat., p. 30.

§ Engraved in Cat., p. 167.

|| Engraved in Cat., p. 116.

** Engraved in Cat., p. 118.

†† Engraved in Cat., pp. 30, 31.

‡‡ Engraved in Cat., p. 118.

THE EXHIBITION AS A LESSON IN TASTE.

could be more agreeable in themselves or more appropriate for a carpet, which should always be an accessory decoration, and aid in displaying the general furniture, rather than rival it, or, what is worse, destroy its effect by its own attractions. It would require gold and white, or something extremely rich and delicate as the prevailing tones of the furniture, to enable it to tolerate even some of the best of these carpets. If they are merely designed to be associated with crimson and gold, well and good; but this would amount to an admission that our upholsterers and manufacturers ignore the public and devote all their energies to the wealthy few, which would be both bad taste and bad policy at once. The real cause of their anomaly is simply and solely want of taste, the utter absence of propriety of design and critical judgment; making no distinction between a ceiling, a wall, or a floor. The convulsive movements of the fingers under a fit of epilepsy, have as much title to the credit of intelligent design as the pencillings of the hand that wanders over the paper uncontrolled by a cultivated taste.

IX.—Ornament.

Having now taken a general and, to some extent, detailed view of all the various branches of manufacture which more essentially depend upon ornamental design, we have yet a few remarks to make on the nature of ornament itself. Ornament is not a luxury, but, in a certain stage of the mind, an absolute necessity. When manufactures have attained a high mechanical perfection, or have completely met the necessities of the body, the energy that brought them to that perfection must either stagnate or be continued in a higher province—that of Taste; for there is a stage of cultivation when the mind must revolt at a mere crude utility. So it is a natural propensity to decorate or embellish whatever is useful or agreeable to us. But, just as there are mechanical laws which regulate all our efforts in pure uses, so there are laws of the mind which must regulate those æsthetic efforts expressed in the attempt at decoration or ornamental design.

There are two provinces of ornament, the flat and the round; in the flat we have a contrast of light and dark, in the round a contrast of light and shade; in both a variety of effect for the pure gratification of the sense of vision. In the first case a play of line is the main feature, in the second a play of masses; and colour may be an auxiliary to both, but it acts with far greater power in the flat, as it is entirely dependent upon light.

Ornament, therefore, is a system of contrasts; the object of study is the order of contrasts; the individual orders may vary to infinity, though the classes are limited; as right-line, or curvilinear series, series of simple curves or clustered curves; series of mere lines or natural objects, as flowers, arranged in the orders of these different series. For example, the common scroll is a series of spirals to the right and left alternately; the Roman scroll is the scutcheon plant, or branch-ornament, treated in this order of curved series.

Such a treatment of a plant is termed *ornamental*, because it is not the natural order of the growth or development of the plant; where the exact imitation of the details and its own order of development are both observed, the treatment is *natural*, and an object so treated, independent of any application, is only a picture or model, not an ornament; to be an ornament it must be applied as an accessory decoration to something else.

The production and application of ornament are distinct processes, though they cannot be separated in applied design. A proper distinction between a picture or model and an ornament, is of the utmost importance to the designer, for the mere power of imitation of natural objects, and even their exact imitation, is perfectly compatible with the total ignorance of Ornamental Art; the great art of the designer is the selection and arrangement of his materials, not in their execution; there is a distinct study of ornament, wholly independent of the merely preliminary exercises of drawing, colouring, or modelling. A designer might produce a perfect arrangement of forms and colours, and yet show the grossest stupidity in its application.

Any picture, whatever the subject, which is composed upon

principles of symmetry and contrast, becomes an ornament; and any ornamental design in which these two principles have been made subservient to imitation or natural arrangement, has departed from the province of ornament to that of mere imitation Art. And in all designs of this latter kind, where we have strict natural imitations applied to purposes of active use, to which the natural types can have no affinity whatever, notwithstanding our adherence to nature in little matters, we have committed a gross outrage upon her in great matters. What merit can we claim for our elaboration of fuchsias and tulips, if the only appropriation we make of their delicate forms is to load them with heavy dishes of fruit or of trifle, burdens so load them more than enough to crush them in their natural state!

The artistic fault here committed, and the Exhibition affords many examples of it, is the using our imitations from nature as *principles* in the design, instead of mere accessory decorations, substituting the ornament itself for the thing to be ornamented: ornament is essentially the accessory to, and not the substitute of, the useful. Of course there are many natural objects which at once suggest certain uses, and we cannot be wrong if we elaborate these into such implements or vessels as their own very forms or natures may have spontaneously presented to the mind.

Every article of use has a certain size and character defined for it, by the very use it is destined for, and this may never be diverged by the designer. It is in fact the indispensable skeleton of his design, and is wholly independent of ornament in its primary condition of a mere form of use. But it is upon this skeleton that the designer must bring his ornamental skill to bear, whether he use conventional ornament or natural, or both; and he is a poor designer if he can do nothing more than imitate a few sprigs or leaves wherewith to decorate it; he must give it character as well as beauty, and make it suggestive of something more than a cluster of weeds or flowers from the field, or this is mannerism indeed.

This naturalist, or, we may call it, horticultural school of ornament, has made rather inordinate progress of late, and unless at once checked by other styles, bids fair to constitute the characteristic mannerism of the Ornamental Art of the age; it seems about to share the fate of *Brococo* in the new work.

Natural floral ornament is a very beautiful kind of ornament, but it is but one kind; and an infinite variety of floral details, especially in the round, would have but a monotonous effect on the mind unless aided by Art,—by conventionalism of arrangement. In no popular style of ornament have natural details ever yet prevailed; the details of all great styles are largely derived from nature, but for the most part conventionally treated, and theory as well as experience seems to indicate this as the true system.

In Egyptian, Greek, and Roman ornament, it is extremely rare to find any natural treatment of the details, that is, any mere imitation. The case is the same with Byzantine and Saracenic Art, and with the great styles of Italy in which all the most perfect schemes are purely conventional, or upon a strict geometrical basis.

Lorenzo Ghiberti has introduced exact natural imitations in his celebrated gates of the Baptistery of San Giovanni, at Florence, of which copies are exhibited by M. Barbézieux, but they are strictly accessory to a general plan, and symmetrically arranged, being neither negligently nor naturally disposed. They are bound in bunches or groups of various shapes and sizes, and disposed in harmony with the main proportions of the gate of which they are ornaments.

There can be no question that the motive of ornament is not the presentation of natural images to the mind, but the rendering the object ornamented as agreeable as possible to it; the details of decoration, therefore, should have no independent character of their own, but be kept purely subservient to beauty of effect. This technical limitation is quite compatible with the most complete symbolic or allegorical expression. Our symbols must be as amenable to the laws of symmetry and the general scheme of our design, as completely as the simplest detail derived from nature.

Symmetry is so important an element of decoration that there is no form or combination of forms whatever, that, when symmetrically contrasted or repeated, cannot be made subservient to beauty. We still use as our principal standards, the very details

THE EXHIBITION AS A LESSON IN TASTE.

adopted by the artists of Greece or Egypt three thousand years ago; not from their speciality of detail, but because it would be extremely difficult, if possible, to select others of a less decided individuality which would so well illustrate the principles of ornament—series and contrast; contrast of masses and contrast of harmony of lines.

There are few ordinary decorations for mouldings or borders, of which these ancient ornaments do not thoroughly express the principles, and there are no examples of them more happy in effect than such varieties as we find on the ancient monuments themselves; the moderns, even the best artists of the Renaissance, have never improved upon their Greek or Roman types, and all the most beautiful ornaments of the Cinquecento are but varieties of Roman standards—the guilloché, the scroll, the anthemion, the echinus, the astragal, the fret or labyrinth, and the zigzag.

To examine these several ornaments as to their principles, we have in the zigzag the simplest example of a right line series; in the fret or labyrinth we have a more complicated example of right line variations; in the guilloché* varieties we have simple curved line series; in the scrolls, successions or alternations of complete curves in the place of a mere running curved line; and in the anthemions, or the varieties of what is commonly called the honeysuckle ornament, we have a third order of curved line series, namely successions or alternations of regular clusters of curves, the unit in this case being itself a succession of curves in a certain order of repetition; and lastly in the echinus or horse-chestnut, and in the astragal and their variations, we have an alternation of round and sharp forms, giving a powerful contrast of light and shade, independent of a certain play of line.

Examining these ornaments, therefore, with reference to their principles, it is clear that, provided we keep these principles in sight, we may change the details at pleasure, whether symbolic or sensuous only, and thus produce that variety of effect so essential to the steady gratification of the eye: one ornament, in fact, suggests many. On the contrary, if we appreciate only the individual details of an ornament, a whole class or genus is represented by a single specimen, and our resources are reduced to the extreme poverty of expression. This has been actually the case as regards the genus of which the honeysuckle specimen is only a variety. Instead of seizing the principle of this ornament, and treating almost any floral or vegetable, or even symbolic, form in that order of curved series, our architects have been engrossed by the details of an individual, and have acquired only one ornament in the place of thousands which must have suggested themselves, had the principle itself been grasped in the first instance instead of the details of only one of its illustrations. There is scarcely a wall in England that might not be treated, on the principle of the Greek anthemion, with nearly equal effect with the honeysuckle, which is only the nearest corresponding type of the ornament in Nature. The eye, however, does not admire the anthemion, the echinus, or the astragal, because they may be taken from the honeysuckle, the horse-chestnut, or the buckleshoe, but because they are admirable details for the illustration of those symmetries and contrasts which, by the very nature of vices, must, by the gratification of this one of its senses, be delightful to the mind—but not harmonies and melodies delight it through another of its senses.

Where the mind views something more than the surface, or where the eyes are ancillary only to the mind, every natural object may be suggestive of some new essential form or combination of forms. The lotus, the lily, and the tulip, are but flowers to the many, but to the designer they must be something more; every individual is

but an illustration of a principle, and it is to the constructive principles of his natural models that the designer should give his attention; by separating the minutiae of individual development from the essential strength and elegance of the construction, he becomes a creator of new forms, and by this simple exercise of the natural faculty of contrivance, he combines with the beauty of nature the ingenuity of Art.

All established styles of ornament are founded upon the same principles, their differences are differences only of the materials—either the natural types or the artificial forms, the details of the several standards which each taste more or less partially developed,—some for one reason, some for another, all arising from some one predominant sentiment. The peculiarity of Byzantine ornament, for instance, is owing to its prevailing Christian symbolism; the peculiarity of the Saracenic, equally decided though opposite in its sentiment, is owing to its rigid exclusion of all imitation of natural types, whence its striking artificial character.

The time has perhaps now gone by, at least in Europe, for the development of any particular or national style, and for this reason it is necessary to distinguish the various tastes that have prevailed throughout past ages, and preserve them as distinct expressions; or otherwise, by using indiscriminately all materials, we should lose all expression, and the very essence of ornament, the conveying of a distinct æsthetic expression, be utterly destroyed. For if all objects in a room were of the same shape and details, however beautiful those details might be, the mind would soon be utterly disgusted. This is, however, exactly what must happen on a large scale; if all our decoration is to degenerate into a uniform mixture of all elements, nothing will be beautiful, for nothing will present a new or varied image to the mind.

It is under this impression that we have undertaken to analyse the various ornamental expressions, in this unexampled collection of the world's industry, to place these distinctly before our manufacturers, in order that they may make their own uses of them, towards the cultivation of pure and rational individualities of design, which will not only add to their own material prosperity, but will also largely contribute towards the general elevation of the social standard.



* Called by the Greeks *spatin*, signifying, literally, a spat or soil, which all the early civilisations use.

† The reference commonly made to the egg and dart, or the egg and shell, is to the echinus; it is derived from the *h-c-m* element, called echinus by the Greeks.

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THE Editor of the ART-JOURNAL announces his intention (at the commencement of the year 1852) to resume the plan introduced into that work three years ago, and to issue MONTHLY REPORTS OF THE PROGRESS OF ART-MANUFACTURE.

These Reports will be descriptive of the most meritorious objects in course of production, and will be generally illustrated by Engravings; occasionally, they will be issued in the form of VISITS TO MANUFACTORIES: and they will comprise FOREIGN, as well as BRITISH, productions.

The Engravings will be executed with the nicest care; by the best artists and engravers on wood.

Manufacturers, British and Foreign, are therefore invited to communicate with the Editor of the ART-JOURNAL, in reference to this plan; and to submit, from time to time, for his approval, drawings of such subjects as they desire to be described and represented.

It is certain that by this course we shall work out our purpose of illustrating "the mercantile value of the Fine Arts;" and obtain for the designer and manufacturer that HONOUR which is at once the worthiest incentive to merit, and its surest reward. We shall also afford an additional security against piracy, by establishing the primary right of an inventor; and direct the Public to those sources from which their wants may be best supplied.

The advantages to be derived from *publicity thus obtained* will be sufficiently obvious: the circulation of the ART-JOURNAL now approaches 30,000 monthly—through the best channels of Great Britain, the Colonies, the United States of America, and the several Nations of the Continent. Its character has been maintained; its authority is recognised; and it will, in future, undergo all the improvements that can result from enhanced experience and augmented capital, so as to elevate the work even higher in general estimation, and render it a still more valuable medium of communication between the public, the artist, and the manufacturer.

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MONTHLY JOURNAL OF THE ARTS.

Price Half-a-Crown, Monthly.

THE position which the ART-JOURNAL has, within the last few years, assumed in the highest rank of illustrated periodical literature, is now so widely known that it would seem superfluous to direct public attention either to its existence or to the mode in which it is at present carried on. But, inasmuch, as there may be some not altogether acquainted with the resources at the command of its conductors for rendering it an elegant and efficient organ of the FINE and the INDUSTRIAL ARTS, a few explanatory remarks may be desirable.

An important character was given to the ART-JOURNAL, in the year 1840, by the publication of a series of prints of the highest order of merit, engraved in the line manner, by the most eminent British Engravers, from the gallery of pictures bequeathed to the nation by the late Robert Vernon, Esq., and known as the "VERNON GALLERY." Each monthly part contains two of these engravings; and among the series of pictures will be found examples of Reynolds, Turner, Collicott, Eddy, Hilton, Wilson, Wilkie, Mulready, Landseer, Maclean, Collins, Ward, Roberts, Stanfield, Stothard, Newton, &c., &c., &c.

In addition to the two engravings given monthly from the "VERNON GALLERY," one is also introduced from the works of the most distinguished British Sculptors, among whom may be mentioned the names of Flaxman, Gibson, Wyon, Baily, the two Westmacotts, Macdonell, Foley, Wyatt, Marshall, Tassie, &c., &c.

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The success of the ART-JOURNAL, during the years 1840 and 1850, induced the Proprietors to make such arrangements, at the commencement of the present year, as would render the publication still more worthy of the extended property it had enjoyed, and to obtain the co-operation of accomplished writers and eminent artists, while availing themselves of all the advantages which increased means had placed at their command. Thus they have been enabled to introduce—

Illustrated articles on "Early Costumes," by Professor Carl Heideloff, produced expressly for the ART-JOURNAL, and engraved on Wood.

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A series of engravings on wood, from the Illustrated Bible of Baron Cotta, drawn by Overbeck, Bendermann, Strubhaber, Jager, &c.

A series of papers, with illustrations procured from the proprietors of the "Vues des Peintres," of Paris, entitled the "Great Masters of Art," a series of illustrated articles, exhibiting the "Domestic Habits of the Early English," by T. Wright, M.A., F.S.A., and F. W. Fairholt, F.S.A.; a series of original designs for furniture after the models of the middle ages, by Carl Heideloff; the continuation of a "Dictionary of Terms in Art," illustrated: the continued series of Dr. Braun's Papers on the Art-Manufacture of the Ancients; and also those of Mr. Robert Hunt, on the "Application of Science to the Fine and Useful Arts," and various matters, interesting and instructive to the artist, the amateur, the manufacturer, and the public.

Arrangements are in progress for engraving examples selected from the ateliers of the sculptors of Germany; of these will be engraved the leading works of Professors Rauch, Wichmann, and Kise, of Berlin; Professor Reichel of Dresden; Schwandeler, &c.

His Grace the Duke of Devonshire, has been pleased to place at the disposal of the Editor, for engraving in the ART-JOURNAL, the whole of his Gallery of Sculpture at Chatsworth, from which drawings are now in progress.

The Editor has also arranged in Germany for a series of drawings—"Episodes in Life"—drawn expressly for the ART-JOURNAL by Moritz Retzsch: these will be engraved on wood, of large size, and in the highest style of Art.

Among the authors whose valuable assistance is given to the ART-JOURNAL, and whose names the Editor is free to mention, are—Dr. Wagner, Mrs. Jameson, Dr. Braun, Dr. Forster, Professor Heideloff, R. N. Wornum, Mrs. Merrifield, T. Wright, F.S.A., Professor Robert Hunt, Professor Forbes, Professor Gordon, Mrs. S. C. Hall, and F. W. Fairholt, F.S.A.

To the seller of the ARTIST; to the library of the AMATEUR; to the desk of the SCIENTIST; to the workshop of the MANUFACTURER; and to the drawing-room table of the AMBLESOME ENLIGHTENED, the ART-JOURNAL is recommended as a "companion and counsellor, at once agreeable and instructive;" as "ably and impartially conducted;" as "stimulating the manufacturer to the production of excellence, and the public to appreciate his improved works;" and as having worked out with "industry, integrity, and ability," its high purpose of "supplying to Artists and Amateurs, accurate and useful information upon all subjects in which they are interested, and to the public the means of justly ascertaining and estimating the progress of Art, both at home and abroad."

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It is hoped that those who have become acquainted that publication, chiefly in consequence of its Reports of the Great Exhibition, will be hereafter classed among its PERMANENT SUBSCRIBERS. The issue of "double numbers" will cease on the 1st of October, it will appear, as heretofore, at the price of half-a-crown monthly.

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